HANDWORK AND ITS PLACE IN EARLY EDUCATION

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PREFACE

This book is intended primarily for young students who are facing the problems of education for the first time, and for practical teachers who work in isolation and have but little or no opportunity of meeting and exchanging ideas with their fellows. The aim has been to give copious illustrations of actual work done by children in the hope of suggesting ideas to the reader which she may apply in varying form to her own work.

Experience has taught that restless and inquiring pupils need a variety of forms of employment, hence an attempt has been made to indicate as many as possible of the simple arts and crafts open to them.

Special emphasis is laid on the Gifts and Occupations of Froebel and on Dr. Dewey's experiments, because a thoughtful study of the work of these reformers cannot fail to be helpful and stimulating to any open-minded student.

The introductory chapter is obviously sketchy and incomplete, but it may help the student to begin to understand something of the child's fundamental needs and then send her on to books which deal adequately with the subject.

I must express my thanks to all the members of my former staff at St. Barnabas, Oxford, for help and

co-operation in working out many of the subjects shown in the illustrations; to the friends who have kindly allowed the work of their pupils to be photographed for insertion—Misses Chadwick, Elliott, Gelder, Stone and Thwaites, and Mr. R. Neve (the debt to Miss Thwaites is particularly heavy); to the Curators of the Taylorian Institute, Oxford, for kind permission to photograph the pottery shown in Figs. 178–81; to Miss Gertrude Vincent, a member of my old staff, for many of the photographs; to Miss H. M. Madeley, for help with Chapter X; and last, but not least, to Mr. J. W. Horne for reading the whole in proof and making many valuable suggestions.

L. L. PLAISTED.

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CHAPTER I

INTRODUCTION

The restless hands of little children are now generally acknowledged to be amongst the educator's most important allies. The recognition of this is mainly due to the persistency with which the physiologists, psychologists, and other reformers have shown the intimate connexion between the hand and the brain, and the impossibility of obtaining all-round development of the latter without the active aid of the former.

The brain consists of a sensory and a motor region. The fullest development can only take place when the sensation is followed by action. The two are interdependent. The young child's senses must be stimulated by the provision of suitable surroundings; then he must be allowed opportunities for responding to the stimulus he has received.

The sight of a child whose limp arms, shuffling gait, and vacant look denote only too surely the possession of a feeble mind is unhappily familiar to us all. We also know that the germs of intelligence possessed by these poor children can be fostered and developed through movement, and especially through the hand.[1] This has been proved over and over again, and indeed to the doctrine that true hand culture is brain culture there seem to be no dissentient voices. We transport the child from the home, the street, or the fields, where at any rate his movements are unrestricted, to a class-room. We make him sit still, or we order his movements to suit our convenience; it is obvious that if we

[1] This is 'not because it is a method specially applicable to defective children, but because it is the natural method more slowly and deliberately applied'.—*Manual Instruction in Public Elementary Schools*, issued by the Board of Education, p. 3.

cannot at present revolutionize school practice we must at least make him some compensation in kind for the freedom of which we deprive him.

As educators our main duty is to provide the child with surroundings and conditions favourable to complete development. This duty is charged with special difficulties for the teacher who works under the cramped conditions of ordinary school life, where tradition and equipment seem to combine to thwart the nature of the child. His intelligence is often starved by the lack of suitable sensory experience, and his budding ideas stifled by the restricted opportunities for independent action. All through life action reacts on thought and makes for clearness of vision and increase of power, but the eager, impulsive little child *learns to think* through action. If we fetter him by the dull formality of the classroom and refuse to allow him to do things with his hands and to explore on his own account we deprive him of the first necessities of growth.

Thus from babyhood onward it is all-important that opportunities for exercising the activity impulse should be provided. In the infant school and the kindergarten the hand often plays its rightful part in the education of the child. Thanks to efforts to link up the kindergarten with the schools for older children, it now receives much recognition in the junior classes. Too often, however, as in other attempted reforms from outside, the real problem is not faced, and the claims of handwork are supposed to be fully met by the somewhat grudging concession of two or three half-hours per week. It is true that the curriculum is often overcrowded, that the 'subjects' already claiming attention are many, and that in the classroom of the present time there are few facilities for occupations. When, however, we realize the vitalizing effect of educational handwork on the whole curriculum, how powerful a grip it obtains on the child, how it brings out his inventive powers, develops his intelligence, trains him in habits of concentration,

energy, and resource, and helps us to bridge the chasm which sometimes exists between school and home life, it will be universally adopted.

The first acts of children are instinctive acts, indeed instinct is the raw material out of which our 'whole mental life' is developed;[1] therefore a consideration of the activities of children involves a consideration of their instincts. Instincts have been defined as 'certain innate and inherited tendencies which are the essential springs or motive powers of thought and action'.[2]

It has been said that 'the chief differences in a human being at different stages of development are due not merely to experience, but to different instincts which are present or prominent at different periods of life'.[3]

As 'many instincts ripen at a certain age and then fade away', it is most important that while the instinct is at its height it should be developed into a habit,[4] or, as Professor James says, that the habit should be 'grafted on' to the 'instinctive tendency'.[5] The problem which we have to face is that of stimulating the child in the right way at the right time.

As the several instinctive tendencies appear and reach their culminating phase, the child's interests generally follow the lines of the development of the instinct. During the early years of a child's life a large and varied number of interests develop simultaneously. In spite of this parallel development there is a certain period when the interest is at its highest point, and when it often happens to 'dominate if not to eclipse all the contemporary interests'.[6] A

[1] 'Our whole mental life, intellectual, emotional, and volitional, is developed from our instincts.'—*Textbook of Psychology*, by W. James.

[2] Dr. W. McDougall, in *Social Psychology*.

[3] *Fundamentals of Child Study*, by E. A. Kirkpatrick, pp. 86–7.

[4] 'Many of our impulsive tendencies ripen at a certain period; and if the appropriate object be then and there provided, habits of conduct toward them are acquired which last.'—*Talks to Teachers*, James, p. 63.

[5] *Textbook of Psychology*, by W. James, p. 399.

[6] *Psychologie de l'Enfant*, by Dr. E. Claparède, p. 150.

study of the interests characteristic of any particular period will help us in solving the problem how best to direct those interests. We must, however, remember that any attempt to state the exact period in infancy when certain impulsive tendencies appear, must be tentative and approximate, for the child's passage from one stage to another is gradual and imperceptible, and many and diverse causes may operate to hasten or retard his development.

The early life of a child may be divided roughly into three periods :

Period	1 . . .	0– 3 years
,,	2 . . .	3– 7 ,,
,,	3 . . .	7–10 ,,

The first period is characterized by a series of random, reflex, and instinctive movements, the object of which is to enable him to obtain control of his body.[1] The child grows rapidly, and the senses of taste, smell, hearing, temperature, and touch are gradually developed. By the constant exercise of the senses the child learns by degrees to differentiate between itself and the rest of the world.

The second period of a child's life 'is also a period of rapid physical growth. The sensory regions of the brain continue to grow and develop side by side with still more rapid development of the motor centres. The memory is getting stronger, and the beginnings of imagination show themselves. The child's will-power is weak and unformed, and his actions impulsive and spasmodic. His ideas are vague and transient, and under favourable conditions they are quickly acted out. The individualistic instinct is very strong. The child's interests are centred in self. It is a time of self-expression. He is interested in the persons and things around him, mainly with a view to what he can get from them. This must not be regarded as a 'bad'

[1] *Textbook of Psychology*, by W. James.

tendency, for it is really a wise provision made by nature for the child to develop his selfhood, his personality.[1]

'It is necessary that the first law of life should be one compelling to self-enlargement and development.'[2] Therefore it is impossible for a teacher to be too appreciative of a child's early strivings after self-expression and self-realization; for by fostering and encouraging rudimentary ideas we may stimulate them to hardy and vigorous growth.

The 'flowering period' of the instinct of curiosity, of imitation, and of construction is between the third and the seventh year. During the 'period of curiosity'—'the age of attempts'—the child is attracted by all things—he seeks the acquaintance of any and everybody, enjoys new sights and the unexpected, likes to do new things as a test of his courage, and to make explorations into new vicinities.[3]

The impulsive and spontaneous stage of the 'Imitative Period' usually begins somewhere in the latter part of the first year and continues until the sixth or seventh year. The child's activities at any particular time during this stage reveal to us his interests at that period.

During this 'age of attempts' it is good for the child to try a great many things. It is not good for him to be forced to exercise much patience and perseverance in performing tasks unsuitable to his age and stage of development.

Movement and moving objects have a strong interest for the child at this period. His own movements are characterized by activity for activity's sake, rather than for the sake of any result he can obtain. Thus he will experiment for the mere joy of experimenting; he will collect trivial objects just for the pleasure of collecting.

This is a period when action seems to hold the whole

[1] *Fundamentals of Child Study*, p. 95. [2] Ibid. p. 97.
[3] *The Child*, by A. Chamberlain, p. 89.

field of the child's interests. He is interested in things for the sake of what he can do with them.[1] If young children are asked to define an object, their answers nearly always deal with its use or with the way in which it reacts towards them. The following are some definitions given by children between the ages of five and six years.

A baby is 'a thing that cries', a dog 'a thing that barks', a cow 'a thing that makes a noise', a 'mother is to do the work and get the dinner', the sun is 'what dries the paths', the stars are 'things that twinkle in the night', grass 'is for children to sit down on', snow 'is to make snowballs and snowmen with'.

The toys preferred by children at this age are nearly always those which move, or which necessitate movement on their part. Their sense of humour is aroused by moving images, such as the sight of falling objects, things being turned upside down or taking an unusual position. Thus in the 'Tar Baby' from Uncle Remus the heartiest and the most general laughter is heard when Brer Rabbit gets 'stuck-up' to the scarecrow. In 'The Cat that Walked by Himself', by Rudyard Kipling, their mirth becomes boisterous and uncontrollable when the woman jumps up on a stool out of the way of the mouse.

The third period is a time of 'slow physical development',[2] and children often appear less bright than during the early period. They tire more easily, and hence it is sometimes called the 'Fatigue Period'. This is partly due to the lowering of physical tone caused by the shedding of the milk-teeth. Any overstrain is likely injuriously to affect the heart. The child begins to be less selfish than before, and the individualistic plays of early childhood gradually give place to the emulative and competitive plays of later childhood. There is a transition of interest from that of mere activity to the result of his work. The crude

[1] *Talks to Teachers*, by W. James, p. 59.

[2] *Psychology of Child Development*, by Irving King.

results which satisfied him during the second period do so no longer. As the love of mere movement develops into a more purposeful activity the child begins to admire skill, and the spontaneous imitation of the early period grows into a more conscious imitation with a definite end in view. His ideals are developing, but since he as yet lacks the skill to carry them out, he often loses heart, and is rather easily discouraged. Towards the end of the period the effects of the developing process are seen in an awakened intelligence and a desire to connect cause and effect.

Play

The Schiller-Spencer theory of play was that it is the overflow of surplus energy. This is true as far as it goes, but it is not the whole truth.

The newer idea, as expressed by Groos, shows us that all young animals display a tendency to play. The higher the ultimate development of the animal, the longer is the period of infancy. The duration of this period is much greater in man than in any other animal, because he has more to learn—a higher degree of skill to develop. It is a period of preparation for serious work later on. 'It is not', says Dr. McDougall, 'that young animals play because they are young and have surplus energy; we must believe rather that the higher animals have this period of immaturity in order that they may play. The youthful play-tendencies are then special racial endowments of high biological utility—the products no doubt of natural selection.' [1]

Dr. Stanley Hall says that children in their play recapitulate race experiences, and he defines play as 'the purest expression of motor heredity'. 'There is a tendency for the various instincts to ripen and come into action in each individual before they are needed for serious use. . . . Play is determined by the premature ripening of instincts.' [2]

[1] *Social Psychology*, p. 109. [2] Ibid. p. 110.

The playful exercise of instinctive tendencies gives rise to habits and permanent interests. 'Out of instinct springs play, out of play develops art. . . . In childhood, to play is synonymous with to experiment. Every new play is a new experience, and this in its turn gives rise to new knowledge, new feelings, new desires, new acts, and new abilities. Play and playthings can serve as excellent culture-implements.'[1]

If we are inclined to doubt the educative power of play, we need only to watch the spontaneous activity of any healthy normal child. Most children, for instance, go through a period when they are absorbingly interested in trains; it may be even to the exclusion of other objects. When the interest in such play is at its height, watch the young child engrossed in converting chairs or any movable objects into railway carriages and engines; watch him as he constructs trains out of any rough material he can get, or as he draws them with coloured crayons. Watch him as he visits the railway station or looks out for the trains as they pass by. How persistent are his efforts to coax his mother into taking him where they can be seen, or best of all to the railway station! How eagerly he asks fond relatives to send 'puffer postcards' of this or that type! With what delight does he welcome the present of a toy train! His knowledge of 'bogie' carriages is often bewildering to the uninitiated adult. Who can doubt that such abandon, such zest, such persistence, and concentration of interest have great value as a phase in the growth-process of the child?

Play is the child's work. Under its 'subtle shaping influence' his whole nature seems to be expanded and transformed. One might almost say that for young children there can be no education, in the true sense of the word, which does not take the play-impulse into account. Just where play ends and work begins is a debatable point which does not seem very vital to

[1] *The Child*, by A. Chamberlain.

the present subject. Perhaps as instinct passes into habit there is a corresponding transition from play to work.

Most of us try to make learning pleasant for the young child by utilizing the playful element in his nature ; most of us recognize the potentialities and promise contained in natural and spontaneous child-play ; we realize that it is the expression of his awakening soul, and that through such expression of his natural impulses and instincts his education may be accomplished. When, however, we face the practical problem of 'turning on the great motive power of the play-instinct'[1] and utilizing it in the education of the child, our path is beset with difficulties and even with dangers.

We must watch the developing impulses and instincts of the child ; we must differentiate between what is trivial and merely transitory, and what is vital ; we must remember that he is in a stage of growth, and we must endeavour to see the possibilities of his present stage in the light of his future development. Further, we must satisfy ourselves that the child's play does not leave him merely where he started, but that a developing process is taking place. As Dr. Dewey[2] says, we must secure two factors: (1) 'initiation in the child's own impulse', and (2) 'termination upon a higher plane'.

What shall children do ? We must begin with something familiar to the child—something close to his interests. The programme will necessarily vary according to the surroundings of the children, but as a rule the child's home and immediate surroundings will form our starting-point. The occupational exercises should as a rule be connected with the rest of the programme. They may form the centre from which the stories, songs, and games of the younger children will start and revolve, or they may serve to illustrate unknown or

[1] Dr. Stanley Hall, in the Introduction to *Education by Play and Games*, by G. E. Johnson.

[2] *The School and the Child*, p. 58.

unfamiliar scenes in story or in song; they offer a means of free expression; through their medium rudimentary ideas of reading and writing and clear and practical number-concepts may be formed.

The interests of young children centre around handling, experimenting, pulling to pieces, construction of things, especially of toys. There is no doubt that a lack of suitable toys, especially during the ages from three to seven years, leaves a void in the psychic life of the child, hence the making of toys should play a large part in his education. While the home of the child is the chief subject of discussion, the construction of a doll's house always appeals to his interest, and the problem of furnishing it provides a means of utilizing the crude results of many of his early efforts. As the child's interests widen, and his knowledge increases, the construction of objects in his own surroundings may be followed by attempts to represent in miniature some of the primitive homes of long ago, or some of the far-away homes of the present day. A description of the home-life of the people who lived in such dwellings will lead naturally to a construction of some of the objects they used, such as the utensils in which they prepared their food, the weapons with which they fought, the implements used in cultivating the land, and the conveyances in which they rode by land, and sailed by water.

The love of *collecting* and of *ownership* should be encouraged. When children possess individual miniature dolls' houses for use at home and at school, such play-houses may serve in turn as receptacles for varying groups of objects with varied symbolic functions. Collections of natural objects, such as stones, shells, feathers, seeds, leaves, and flowers, serve as an excellent introduction to nature-study and geography, and most subjects can be illustrated by a series of picture post-cards and newspaper pictures. Each child might have his own scrap-book in which he pastes the pictures which he collects. Such books will vary from the crude

heterogeneous pictures gathered together by the six- or seven-year-old to the more complete and orderly collection of engines, motor-cars, ships, stamps, or illustrations of travel made by the ten- or twelve-year-old.

The various phases of the *game interest* may be catered for by making balls, skipping-ropes, whips and reins, kites, aeroplanes, bows and arrows, properties for dressing up and acting.

The children's developing curiosity and love of investigation are satisfied and strengthened by the making of simple mechanical toys or models, such as see-saws, railway signals, wind- and water-mills, cranes, lifts, revolving or draw- bridges. It is interesting to compare the productions of the seven-year-old and their mere suggestion of mechanism with the more ambitious and elaborate work of the ten- or twelve-year-old. There seems no doubt that when closely associated with personal investigation of well-made models, such constructive efforts offer an excellent means of developing intelligence and power.

Although the forms of handwork will vary with the character of the district and to some extent the individuality of the teacher, it must be fundamentally related to the instincts, interests, and capabilities of the child, and to the human occupations of the world.

Material. Where the classes are large and the teacher's time limited, it is often necessary to fall back on prepared material. Many teachers are, however, forced, through lack of funds, to use any rough material which can be obtained; and where the surroundings are favourable and the teacher resourceful, this is often an advantage rather than the reverse. The children help to collect natural objects from the fields and woods; or they bring from their homes materials of various kinds, much of which would otherwise be thrown away.

In many cases where the use of prepared material is the rule, materials brought by the children might well be used occasionally; for, especially between the ages

of three and seven years, variety both in matter and in method is one of the first essentials of good sense and muscle-training. Knowledge can be gained only through the senses, and, as we have seen, both sensory and motor experience are vital to the harmonious development of the child. A child who may look but not touch will often look without seeing.' [1]

> His pocket knife to the young whittler brings
> A growing knowledge of material things.
>
> J. PIERPONT.

Much sense-experience may be gained, incidentally and almost unconsciously, while handling and using natural or manufactured objects (which may be utilized in simple constructive work), such as feathers and corks ; chestnuts, burrs, and various seeds ; sand, clay, and paper : rushes, grasses, straw, twigs, &c. ; strips of silk, cotton, and woollen material. While the child is engaged in making something which his fancy has suggested, impressions are being gained through a combination of the sight, touch, temperature, and muscular senses. This sense-training is generally superior to that obtained in the 'Observation' lesson, for the child's relations with the material are more firmly established, and the way is being paved for an intimate and abiding kinship with the world around. His eyes are opened to the possibilities of the material which he can obtain from the fields and woods, or from his home, and an important link between school and home is the result. The child is able to continue in the home the manufacture of the fascinating toys which have been his delight at school. The joy in transforming material into something he can use or give away, and the training in making the most of things, will be extremely valuable in later life.

What shall be the *attitude of the teacher* towards the child ? The teacher will try to put within the reach of the child the means of teaching himself, and then

[1] *The Child*, by W. B. Drummond, p. 20.

to give the most thoughtful consideration possible to each stage of the process. The children's preferences, their method of applying themselves to the work, and the way in which they meet failure or success, will throw more light on the educator's work than many treatises on psychology.

The child's power of imitation is great. This must be taken advantage of, but in doing so the teacher's aim must be so to utilize the instinct as to lead the child to the discovery of underlying principles, rather than to mere copying. Such discovery should be followed by immediate application according to the child's own ideas. Help, to be really valuable and educative, must be given when the child is ready to benefit from it. Just as all teaching should be an answer to a question expressed or understood, so all aid given should follow the trend of a child's mind at the time—it should help him out of a difficulty which he has experienced.

Dr. Dewey says : ' A word should be said regarding the psychology of imitation and suggestion in relation to kindergarten work. There is no doubt that the little child is highly imitative and open to suggestion ; there is no doubt that his crude powers and immature consciousness need to be continually enriched and directed through these channels. But on this account it is imperative to discriminate between a use of imitation and suggestion which is so external as to be thoroughly non-psychological, and a use which is justified through its organic relation to the child's own activities. As a general principle, no activity should be *originated* by imitation. The start must come from the child ; the model or copy may then be supplied in order to assist the child in imaging more definitely what it is he really wants—in bringing him to consciousness. Its value is not as model to copy in action, but as guide to clearness and adequacy of conception. Unless the child can get away from it to his own imagery when it comes to execution, he is rendered

servile and dependent, not developed. Imitation comes in to reinforce and help out, not to initiate.

'There is no need for holding that the teacher should not suggest anything to the child until he has *consciously* expressed a want in that direction. A sympathetic teacher is quite likely to know more clearly than the child himself what his instincts are and mean. But the suggestion must *fit in* with the dominant mode of growth in the child; it must serve simply as stimulus to bring forth more adequately what the child is already blindly striving to do. Only by watching the child and seeing the attitude that he assumes towards suggestions, can we tell whether they are operating as factors in furthering the child's growth, or whether they are external, arbitrary impositions, interfering with normal growth.'[1]

It is most important that the early training of the nervous system should be of the right kind. As full a play as possible should be given to the *spontaneous* instinctive actions and emotions which are characteristic of children at the particular stage in question.

During the early period no *small* or *tedious work* must be required. Fine work is bad for the child's eyesight, and it is likely to 'result in the specialization of the smaller nerve and muscle centres, long before their natural time of development.'[2]

We have all seen how tightly the child grips his tool during his efforts to make new movements, and how he moves his body and his limbs. Sometimes as he makes a difficult curve even the tongue is obtruded. Judd, in *Genetic Psychology*, says, 'When the child tries to use his unpractised muscles his movements are excessive, especially the movements of the finer muscles. . . . The teacher should see to it that, if diffusion[3] tends to

[1] *The School and the Child*, by John Dewey, p. 59.

[2] *Fundamentals of Child Study*, p. 27.

[3] 'The child's movements and those of the adult when he tries to use unpractised muscles are called diffuse movements. You will have no difficulty with this word, I am sure, for nothing is more obvious than

emphasize the small muscles, teaching should emphasize in due measure the larger muscles.' [1]

Not less important than the need of ministering to the sense-training by giving a variety of material, is that of *variety in method.* If the full educational possibilities of the hand are to be realized, the activities chosen must bring into play as large an area of the brain as possible: therefore occupations must not be taught and continued until they become automatic. Thus the teaching of fine sewing on calico to children of seven or under is not only likely to be harmful to the eyes, and to demand adjustments of the nervous system for which the child is not ready, but much mechanical practice is needed to reach the standard usually required.[2]

'It is evident', says Kirkpatrick, 'that special exercise of parts may be injurious because it over-develops the parts exercised, and hinders rather than helps in the harmonious working of part with part. Extreme specialization is therefore to be avoided at all times.

'During the growing period when plasticity is greatest, extreme and permanent specialization is much more readily produced than in adult life, when plasticity is less and parts are normally developed. It may even be questioned whether, in growing children, all specialization is not over-specialization.' [3]

The longer the plasticity of the child's early life can be preserved the better. By joining hands with nature and encouraging the child to experiment, and to try his powers in many directions, we enlarge his personality, cultivate a many-sided interest, and help him to acquire the power of adaptation to changing conditions and to new situations.

that the untrained movements are too much spread out. The right muscle does not contract at the right time and the whole irregular mass of activities lacks organization in just the way indicated by the word diffuse.'—*Genetic Psychology for Teachers*, Judd, p. 220.

[1] Ibid. p. 225.

[2] See Chapter XVI.

[3] *Fundamentals of Child Study*, p. 26.

The deadening effect on adults of continually doing monotonous work is well known. Miss Margaret McMillan describes the change that takes place in children of twelve years who are sent to work in coal-pits or in mills. Intelligent and responsive when they begin such work, they soon lose their brightness and elasticity, and become dull and stupid. So disastrous for the child is the thwarting of nature.

Variety in method may be secured in many ways. One day free and adequate expression may be furthered

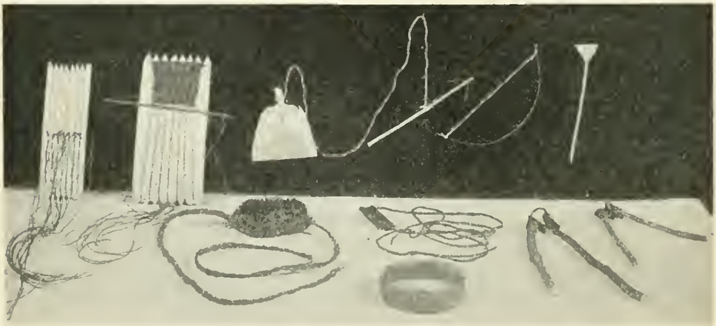

Fig. 1. Flails, Slings, Harpoon, Bow and Arrow, Sieve.

by allowing the children a choice of material; another day material may be supplied which, within certain limits, may be supplemented as the child desires. At another time the material may be given out and the child expected to accept its limitations and to make the best of it. Again, free expression may be asked for on one day, a model provided for another, a subject specified for a third, work from memory on a fourth, from a picture on a fifth, and so on.

The handwork schemes should provide for *repetition* of the simple exercises, *with great variety* in the form of the objects produced, thus teaching the rudiments of the handicraft incidentally, and not through drill in the form of a series of preparatory exercises.

The need for allowing the children much scope, much opportunity to plan, develop, and execute, can scarcely be over-emphasized. All work demanded of little ones should be *simple*; they lose confidence if the exercise given them is not well within their powers, and if their efforts are followed by repeated failure. Success, on the other hand, results in a consciousness of increased power of achievement.

It should also be *such as can be completed in a short time*. They work impulsively and rapidly, but their interest soon evaporates. It is a mistake to tax their patience, and to expect them to look forward to a far-off result. They live in the present, and if the work is to be in tune with the natural joyousness of their nature, the results of their earliest efforts must appear quickly. As a natural consequence, the products will be very crude.

All early exercises must be *purposeful*. Just as every line in the child's symbolic picture-drawing has a meaning, so all his first efforts at constructive work should be attempts to make things which are real to him.

Some adaptation and development of method will be necessary for the varying stages. During the first years of school life (3 to 5 years) the child's energy might be economized and the growth of self-control and originality encouraged by leaving the child as free as possible both as to choice of play material and length of time spent at any particular occupation. Free modelling, drawing, and constructive work should play a large part in the education of the child during the next two years (5 to 7 years). The individual work of the early period should gradually develop into group or class work, and thus the children will be brought into closer social relations with their fellows.

The transition from the stage when symbolic results satisfied the child should be marked by occasional exercises directed towards the improvement of technique. Admiration for skill may be met by giving opportunities for watching skilled people at work.

Towards the end of the third period (end of tenth year) the large coarse work of the early stage should be supplemented gradually by work of a rather finer character, and the call of the awakening intelligence should be answered by giving exercises which make a stronger intellectual appeal.

Thus, as each stage appears, we must endeavour to meet the child on the plane of his instincts and impulses. Through their healthy exercise in playful activity, right feelings will be awakened; through the gradual increase of effort, the power of concentration and of self-control will be formed; this, in due course, will lead to the development of the will and the acquirement of habits of industry. If, during the whole school life, the chain of continuity is preserved unbroken, much may be done in the direction of laying the foundations for stability of character, and for the development of good and useful citizens.

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CHAPTER II

FROEBEL'S GIFTS AND OCCUPATIONS AS A SUGGESTIVE BASIS

'The plays of children are the germinal leaves of later life,' wrote Froebel, and in his 'Gifts' and 'Occupations' he has given us an elaborate system for the education of the child through the medium of play. The value of this system as a means of initiating the natural method of educating the child has been incalculable. It will, however, be well for us to regard it rather as a highly suggestive scheme from which we can derive inspiration and instruction, than as a model to be copied faithfully in every particular.

The child's plays must grow out of his daily life, and although Froebel based his educational plans on the 'eternal verities' of child life, some adaptations and modifications of the material and of its use will be needed for children of another century and another land.[1] As Kate Douglas Wiggin says, 'These are all accessories—they are of no more importance than the leaves to the tree; if time and stress of weather strip them off, the life current is still there, and new ones will grow in their places.'[2]

Most of the principles which influenced Froebel's choice of materials will be found to have a sound psychological basis; thus he believed that a young

[1] 'The kindergarten was a union of the nursery and of the philosophy of Schelling; a wedding of the plays and games which the mother carried on with her children, to Schelling's highly romantic and symbolic philosophy. The elements that came from the actual study of child life —the continuation of the nursery—have remained a life-bringing force in all education; the Schellingesque factors made an obstruction between it and the rest of the school system, brought about isolations.'—Dr. Dewey in *The School and Society*, p. 81.

[2] *Republic of Childhood*, Preface, p. xi.

child must deal with solids before he can understand planes or outlines, hence Gift I consists of balls, Gift II of the sphere, cube, and cylinder, and Gifts III, IV, V, and VI of bricks of various shapes. Most observers of children agree that a beginning should be made with a representation of 'real' things, by means of such occupations as building, moulding, or modelling, rather than with that of pictures or flat representations. Even in their free symbolic drawings children represent what they know to exist rather than what they see—buildings are drawn as if the walls are transparent, in order that what is happening within may be seen.

A modern psychologist (Kirkpatrick) tells us that 'the order of development of the constructive impulse is from the more concrete and tangible to the more immaterial and symbolic. Making things naturally precedes making pictures of them'.[1] Preyer, in *The Mind of the Child*, tells us that 'the perception of the difference between a surface extension and an extension in three dimensions begins late and is established slowly'.[2]

In the type-forms of Froebel's First and Second Gifts, provision is made for gaining sense-experience in the natural way by handling solids, while the balls of Gift I satisfy the child's love of colour. The building gifts (Gifts III to VI) also take account of his impulse for pulling things to pieces, and at the same time develop the constructive instinct. The simple type-forms help the child towards clearness of ideas by furnishing a convenient basis for a comparison and classification of the objects seen in his surroundings; the gradation from simple to complex in the form and colour of the material, by avoiding the confusion of mind likely to result from the presentation of too many forms, encourages the child, and makes for sound and definite knowledge.

[1] *Fundamentals of Child Study*, p. 28.

[2] p. 180.

Moreover, such treatment of the gifts as that which endows with life the ever-moving ball, the rolling cylinder, and the lifeless bricks, is quite in harmony with the child's animistic instinct; for 'like primitive man, he imputes whatever he feels within him to the objects around him, and in his thought all things live, move, feel, and speak'.[1]

Gift I. Not only is the ball the universal plaything of the child, the youth, and the adult of the present day, but we have evidence of its uses as a toy for children in prehistoric times, while in the civilizations of the Egyptians, the Greeks, and the Romans the ball seems to have entered into the games of children and of adults. Ball exercises develop quickness, alertness, dexterity, lightness of touch, as well as the poise and balance which result in grace of movement.[2] The soft balls of Gift I are just large enough for the tiny hand to grasp, and were intended by Froebel for the child during his first three years. An intelligent Froebelian use of this gift with the three-year-old children of our kindergartens and baby-rooms will afford the little ones good exercise in form, colour, and language, and when the spontaneous joining of language with action is encouraged, the child's development is helped along by natural means. Moreover, such a use has often served to show the young teacher how great a part action should play in the early school life of the child, because, on the one hand, the undeveloped mind, which is often quite untouched by mere words, is readily reached through the medium of action, while, on the other, dramatic expression is the child's natural method of supplementing his somewhat limited powers of speech.

Attractive and serviceable balls of wool and other materials can easily be made for the little ones by the older infants, and used instead of, or in addition to, the

[1] *Symbolic Education*, p. 87.

[2] For some good ball games see *A Book of Song and Ball Games*, by K. F. Bremner.

Gift I balls. Such toys as those shown on p. 207 are simply made, and might be used by any of the infants during their free play periods.

Gift II consists of the sphere, cube, and cylinder. Since the money available for the equipment of infants' schools and kindergartens is usually limited, the expense of this gift is generally found too great to admit of its provision for each child in an elementary school class. There should be at least one large box, and the children who cannot be provided with one can use marbles, blocks, boxes, reels, and cardboard cylinders. The points of contrast and similarity between the ball, the cube or block, and the cylinder should be noted by the children. The five-year-old children can model balls in clay or in dough brought from home. The ball may be flattened and transformed into a cube, and then changed into a ball again by pushing in or cutting off corners and edges. The cube may be changed into a cylinder. Small cardboard boxes may be threaded on string and revolved like the Gift II cube. In this the cardboard box offers more opportunities for experiment than the wooden block, because the child can pierce it and thread it himself.

The first part of such lesson-periods might consist of handling and free experimentation with the material, and the latter part of attempts to use it in making something. Thus the little child of three or four can string a number of beads, seeds, empty cotton-reels, bits of straw or bamboo. The child of six to nine years can employ his material in building anything that takes his fancy, or in co-operating with his neighbours and constructing any scenes of interest.

Building

'All children have the building instinct, and "to make a house" is the universal form of unguided play.'

Building is one of the best means of satisfying the child's impulse to investigate, to experiment, and to

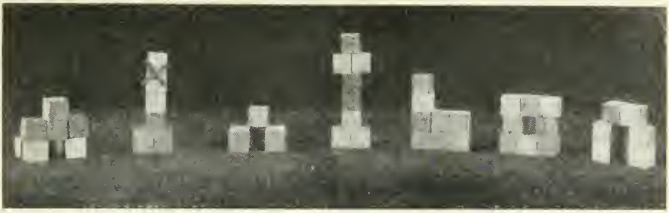

FIG. 2. Free Building with Gift III.

FIG. 2A. Children's Buildings

construct. A box of bricks is always a delight to the child, and in the nursery we may find specimens of bricks of every size and shape.[1]

[1] Most of these are very acceptable for building in school.

Many enterprising teachers have supplemented any bricks at their disposal for children's building exercises by empty cotton-reels, matchboxes, cardboard boxes, corrugated paper, folded cardboard for roofs, and other odds and ends of material. Results as wonderful as those shown by Mr. Wells were obtained by a class [1] of forty children of about five years of age. They arranged themselves on the floor in little circles, containing about eight in each. A sack of building material, including bricks of varying forms and sizes, empty cotton-reels, and cardboard cylinders, was emptied into the centre of each ring. During the preliminary discussion in which the children settled what they should build, the captain of each group acted as chairman. A plan was soon agreed upon, and in about ten minutes there grew up fairy tale castles approached by bridges, and wonderful villages containing churches and dwelling-houses, shops, and schools.

Where circumstances permit, it is a good plan to let the children build in the playground with larger wooden blocks (say 1 ft. × 6 in. × 3 in.). This is the custom in some German kindergartens, where the little ones are trained to stack the building material in one corner when their play is over.

Building with real bricks and mortar is done by the children of about seven years at the Fielden Demonstration School, Manchester. After visiting and observing a building in course of construction, they are provided with bricks, helped to mix suitable mortar, and so allowed to construct a miniature house with real building materials. In the Montessori schools little children build walls with small bricks of their own construction.

Up to the present time, however, no more suitable material than the 'Gifts' of Froebel has been designed for the regular use of the young child in the kindergarten, the baby-room, and the infants' school, though the

[1] Cray Road Infants' School, Shipley (Miss Gelder).

Fig. 3. Free Building with Gift IV.

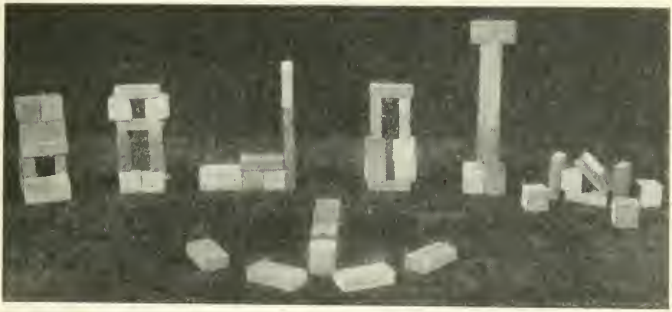

Fig 4. Building illustrating the Story of Dick Whittington (Gifts III and IV).

Fig. 5 Sofas (Gifts III and IV).

Montessori[1] apparatus includes bricks of other forms and sizes which may be used to supplement Froebel's bricks. Gifts III and IV are mainly used by the little ones of 3 and 4 years of age, and Gifts V and VI may with advantage be used by children of from 5 to 8 years.

The collective bricks of Gifts III and IV respectively form a cube measuring two inches in every direction. If possible, bricks of a larger size than this should be used by the young children.

Gift III is evolved from a 2-inch cube by cutting through once in each direction. This division results in 8 cubes measuring 1 inch. These, placed in a cubical box, were intended for the use of children whose ages varied from 2 to 3 years.

The Fourth Gift consists of a 2-inch cube divided once in a vertical direction, and three times in a horizontal direction. Each brick measures $2 \times 1 \times \frac{1}{2}$ inches. Both these gifts are suitable for babies of from 3 to 5 years of age. After they have become accustomed to building with each gift separately, they should be used in combination. When the children are first allowed to combine them, it may be well to give a box of Gift III or IV to alternate children, who would share them, so that each child has four of the cubes and four of the solid oblongs. When the possibilities of this building material have been mastered, the children may be given a complete box of each kind.[2]

[1] The building blocks in the apparatus designed by Madame Montessori include:

(1) The so-called '*Broad Stair*'—10 quadrilateral prisms of equal length, the largest of which has a base of 10 centimetres, the others decreasing by 1 centimetre.

(2) The '*Long Stair*'—10 '4-sided rods'. The longest measures 1 metre, the shortest a decimetre. The decrease from the longest to the shortest is in regular gradation.

(3) The '*Tower*' series, consisting of 10 cubical blocks, the base of which varies from 1 to 10 centimetres.

[2] Froebel says: 'The introduction of this (Fourth) Gift should not supersede the use of its predecessor; on the contrary the two gifts should be played with alternately, the one thus assisting to produce a clearer apprehension and more varied use of the other. The Third

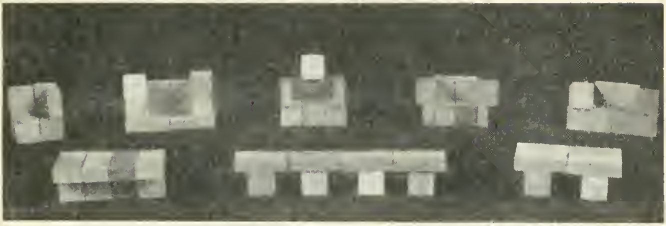

Fig. 6. Chairs and Tables (Gifts III and IV).

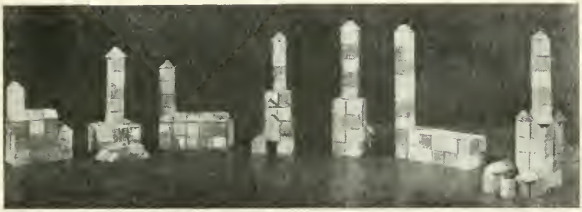

Fig. 7. Churches (Gift V)

Fig. 8. Greek Temple (Gift VI).

The Fifth Gift is also cubical in shape, but larger than the preceding ones, for it measures 3 inches in each direction. It is divided twice vertically, and twice horizontally into 27 cubes of equal size.

Besides the increase in the size of the cube, and hence in the number of the bricks, three of the cubes are divided once diagonally into two equal parts, and three twice diagonally into four equal parts. Thus the gift contains 21 whole cubes, 6 half-cubes, and 12 quarter-cubes, or 39 bricks in all.

In building the cube ready for packing into the box, it is well to place 9 whole cubes in each of the two lower layers, leaving all the divided cubes on the top. The top row will thus contain one row of undivided cubes, another of cubes divided in half, and a third of cubes divided into quarters. By this arrangement the bricks are less likely to fall apart and cause confusion when they are turned out of the box.

This gift is a development from Gift III. Its distinguishing features are the slanting line, the triangle, and the division into thirds and ninths. The oblique line provides a means of representing slanting roofs of houses, archways, and triangular columns, hence by the use of this gift very good representations of actual buildings may be made.

Gift VI. As Gift V is related to the Third Gift, so the Sixth Gift is an extension of the Fourth. It is divided into 27 oblong bricks of the same size as those of Gift IV. Of these, 3 are divided vertically and 6 transversely into equal parts, giving 6 columns and 12 squares.

This gift has great architectural possibilities. The column is its distinguishing feature, and this renders it suitable for the representation of Greek buildings. Through its medium many of these can be constructed,

and Fourth Gifts complement each other in a striking manner and their alternate use gives new life and freshness to each. . . . The two boxes should not be used together until their separate possibilities have been thoroughly mastered.'—*Pedagogics of the Kindergarten*, by Friedrich Froebel, pp. 193 and 195.

and if it is used in conjunction with the Fifth Gift, familiar buildings can be more or less faithfully represented, or even copied to scale.

Gift V. B. The curved surface was omitted by Froebel. He says, however, 'it is evident that after building-boxes containing only *straight* forms, derived from the cube, there should come such as have *round* forms, derived from the globe and cylinder, in addition to the angular ones.'

Gift V. B is an attempt to supply the somewhat neglected curve. It contains

12 whole small cubes,
3 cubes divided diagonally into 4,
12 half cylinders, and
8 hollowed cubes.

The column and the rounded arch seem to be specially suitable for the construction of Norman architecture.

There seems to be a danger of the young teacher adopting one method, and employing it too exclusively. Some favour the 'Imitation Method'. Under the delusion that children are making rapid progress, and that the possibilities of the material are being taught, the teacher does all the suggestion, while the children imitate more or less blindly and mechanically until their power of initiative is in danger of being imperilled, if not actually lost. During the early stages it is extraordinarily easy to do harm in this direction, and when this is the case the slight improvement in technique is very dearly bought. Others will adopt the 'Free Play' method, and practically leave the children to their own devices. This is less harmful than the arbitrary imposition of the teacher's ideas, but her true function is still in abeyance, for children need judicious encouragement and help from their elders, and it is our duty to give it.

It is perhaps well to remind ourselves that 'Invention, strictly speaking, is little more than a combination of those images that have been previously gathered and deposited in the memory; nothing can

come out of nothing ; he who has laid up no materials can produce no combinations '.[1] Hence we should direct the children's observations, provide variety of subject and method, and join in the building plays with sufficient zest to make them feel it is worth while doing their best.

The opening of boxes, turning out and putting away of bricks, may well be done as an imitative exercise with the teacher. This method is also useful for giving first ideas as to the mathematical division of the gifts, and occasionally for revealing possibilities which the children have been unable to discern. Much prominence must, however, be given to such methods as will lead to a quickening of the powers of observation by stimulating the interest in objects and in buildings.

With the young children conversation about the objects represented will help to make the vague more definite, and to increase the child's confidence in himself.

As Dewey says, ' The instinct of investigation seems to grow out of the combination of the constructive impulse with the conversational.' Children should frequently be asked to construct real objects unaided, while the teacher encourages their efforts and leads them to criticize each other's work. The construction of a building from memory will lead to a desire to observe the building, to compare it with the conception already in the mind, and thus to the filling in of gaps in the mental picture, and to a better acquaintance with the world of form. Much variety of method is needed. Sometimes, for instance, as a variant, the little ones may be asked to build from the teacher's directions. This is often valuable for them as an exercise in understanding and interpreting promptly and intelligently.

Opportunity for building from memory and for free invention should be given very frequently. In early building lessons a few minutes' free play should be

[1] Quoted from Reynolds, Discourse II, by Professor Lethaby, in *Architecture, Mysticism and Myth.*

given during each building period. As progress is made children should be allowed to co-operate with each other, in groups of various sizes, under the leadership of the teacher or of one of themselves.

We must remember that a superabundance of material tends to confuse the child, and to stifle rather than to stimulate his powers. As 'necessity has been the mother of invention' in the history of the race, so, within due limits, the need for scheming and contriving will tend to bring out the child's resources. We have already suggested that during early lessons in Gifts III and IV the bricks shall be shared.

Gift V lends itself naturally to division into thirds. It may be well during the first lessons to little children with this gift, to give a box to every third child in the class, and to require the children who receive the boxes to share the bricks with two of their neighbours. Otherwise the advance seems too great for the little children of five years, for whom this building material is intended.

The material should be mastered, but the child must not be allowed to weary of it. When he seems to have exhausted its resources, some new elements should be introduced.

Building in some form or other should be included in all schemes for directing the plays of young children. The wooden blocks of the 'gifts' provide a valuable means of representing form—a means well suited to the young child.

As we have already suggested, the Gift lessons may at all stages be varied and supplemented by any suitable material that can be obtained. The Montessori blocks described on page 26 may be given to little children of three years before the Froebel bricks are used; their use may be continued by the three- and four-year-olds side by side with that of Gifts III and IV.

As an exercise for seven- or eight-year-olds the results shown by Mr. Wells can be paralleled by building and working with varied material on the kindergarten

tables or on the floor of the classroom. Thus a realistic Algerian village was constructed by children of the above age under the leadership of the teacher.[1] The material used was most varied, and was collected by the combined efforts of children and teachers. The floors were made of tiny bricks modelled by children. The flat roofs of the mosque, like those in Mr. Wells's *Wonderful Towns*, were varied by minarets and domes—the latter were made of rolled paper and of half india-rubber balls, instead of the 'half Easter eggs and those card things the cream comes in' which he and his children used. Cardboard boxes, diverse in size and shape, served for houses. Cloistered courts were formed by cutting out a number of archways from the sides of some of these and then arranging them in the form of a square around a central fountain.

1. *Building as a means of sense-training.* A knowledge of form, weight, comparative length, width, and thickness may be gained by handling, sorting, and arranging sets of bricks, such as the Montessori blocks (the Broad and Long Stair and the 'Tower'). In the kindergarten some measure of such training is generally given incidentally.

2. *Building as a means of expression.* Sometimes the building period may form a complement to the conversation lesson or to the story. This use, as a means of representing from memory or from imagination any suitable objects, is a valuable one.

3. *Building as a means of illustration.* It is also a valuable means of giving clear ideas of buildings or other objects mentioned in early history, geography, and literature lessons. Thus Greek temples may be built with Gift VI. Some ideas of the influence of environment on human life may be given by building typical dwellings, such as a Norwegian or a Swiss cottage. The building of a flat-roofed house with its external staircase will help to make clear the conditions of life in the Bible stories.

[1] Miss Ogden, Akroyd Place, Halifax.

Sometimes such lessons might be preceded by the building of the forms by the teacher, as a test as to how far descriptions and drawings have been effective. The children much enjoy such exercises, especially when they take the form of 'guessing games'.

Using the building exercise as a means of centring the attention of the child in local buildings to which an historic interest is attached, will provide a background of ideas that may serve as points of contact during later work. Such ideas may thus form 'interpreting material' for the grasp of larger concepts as time and experience present opportunities for forming them.

From the building of simple Greek temples and Eastern houses, and comparing the shapes of the door and window arches, the spaces between pillars with those of the buildings in his own district, the child will be led to observe the variety of method employed in roofing a space, and hence to a means of defining the various styles of architecture with which he may meet in his own district. During such study many interesting examples of conservatism may be found, such as the retention by the Egyptians and Greeks of the flat arch—originally formed by the use of long pieces of wood—even when wood has been replaced by stone, which is equally well adapted to other methods.

FIG. 9. Eastern House (Gift VI).

The attempt to build an old tower would lead to a study of the uses to which such towers were put in olden days. The tower of St. Michael's Church had an increased significance for the young children, who observed and built it, when they realized that it had formed a citadel in which the people of Oxford took refuge from the attacks of their enemies. The account of the drawbridge formerly seen in the church made a strong appeal to them.

4. *Building as a means of teaching number.* Gifts III,

IV, V, and VI are well adapted for developing ideas of measurement and of number. The Tillich bricks (' a box containing ten 1-inch cubes, ten bricks 2 inches high and 1 inch square at the base, ten 3 inches high, and and so on up to 10 inches high') offer another form of building material for the systematic or incidental teaching of number. The use of the above is similar to that of the ' Long Stair ' series in the Montessori system.

5. *Building as a central subject.* Building is such a fundamental occupation, and offers so many opportunities for linking on to the social life of the child, that it is quite worthy to rank as a subject in itself. We have already suggested that there shall be a gradual progression from simple to the more complex material, and whether building is treated as a separate subject or merely as a means of illustration and expression, there must be a careful grading of difficulties. With little children the building period may form the centre around which some of the other lessons may revolve.

The building of the furniture in the home may form the starting-point for the conversations about the home life. The attempt to build particular houses in the vicinity will stimulate the observation and vitalize the ideas of the children. Co-operative efforts to arrange buildings will make a good introduction to the judging of distances, and the drawing of simple plans of the village or the surrounding streets. After building, more or less roughly to scale, the school, the church, the blacksmith's shop, and other shops and houses near the school, the children may suggest how they should be arranged. A tentative arrangement would be succeeded by an inspection of the actual buildings, and by the making of comparisons and probably rearrangements. A farm and its outbuildings, or a seaside scene, provide good exercise of this kind. When Froebel's Gifts and Occupations are being used bits of other material need not be withheld from those children who find them necessary for the more complete expression of their ideas—thus the little boy who built the windmill

in Fig. 2 asked for paper to make the arms. In the construction of a street, the little builders often like to introduce lamp-posts. These may be made of sticks and any material which is preferred. Silver-paper may be given to represent a canal, river, or lake, if such expanses of water are found near the street which the children are building.

Description of Illustrations

The building in Figs. 2–5 was done by children of four or five years of age. For Figs. 4–6 boxes of Gifts III and IV were given to alternate children, who shared the bricks, so that each child had four bricks from Gift III and four from Gift IV. The subject was suggested by the teacher. The objects represented include Dick Whittington's house, the church whose bells invited him to become Lord Mayor of London, and the finger-post which pointed out the route. The curious jumble of bricks on the extreme right represents Dick resting on the wayside, and those arranged in the foreground are intended for the boat on which his cat sailed.

Fig. 7 shows seven of the representations of churches made by children of five years during their first building period with this gift. All the churches show a strong family likeness to their own, which is built in the Italian style with a very high tower. Some attempted to represent the apse at the east end, while others appear to have been more struck by the side view.

Fig. 9 was built by a class of children of between five and six years, under the leadership of the teacher. It is an attempt to illustrate a flat-roofed house such as is seen in the Holy Land. There is a staircase on one side, and a window on the other. As no other means of roofing-in seemed to offer itself, the lid of the box was made to do duty in this way. The tiny roll seen in the far corner represents a bed. It was woven of raffia on a cardboard loom measuring about 2×1 inches.

The Plane

In the Seventh Gift we pass from solids to planes.

Part I of this gift consists of a box containing 48 tablets measuring 1 square inch. In Part II the squares are divided diagonally into equal parts forming right-angled isosceles triangles. Part III consists of the oblong, similarly divided into the right-angled scalene triangle; in Part IV we find the equilateral triangle, and in Part V the obtuse-angled isosceles triangle obtained by the division of the equilateral triangle.

These tablets have great possibilities in the direction of teaching form. They may with advantage be used by little children in conjunction with folding papers of the same form, and much knowledge of their essential features can be obtained incidentally in the course of various plays.

The words 'isosceles', 'scalene', &c., will of course not be used until the children are much older, and ready to learn more or less formal geometry. The square tablet is especially useful for early number lessons. As an occupation the square tablet is intended to be used side by side with the building cubes, and thus to form a transition between the solid and the line which follows in the Ninth and Tenth Gifts in the form of sticks and rings for laying the outline of various objects.

The Line

The slats or splints of the Eighth Gift form a link between the plane of the Seventh Gift and the line of the Ninth, sticks of various lengths for laying figures. A variety of figures may be formed by interlacing the splints; such a use of the gift provides exercise for both hands, and forms an introduction to weaving.

In the Tenth Gift we pass from the right line to the circle; the gift contains a number of metal circles and semicircles.

The Eleventh Gift consists of a thread of knitting-cotton or packing-string, of about 9 inches in length. The ends of the thread are joined by a small knot, and it is damped by placing in water. The children form various shapes with their fingers or with a pointed stick.

Sticks for laying the outlines of forms, and for free expression and illustration, are very generally used in kindergartens and babies' rooms of the present day. The repeated warnings of doctors and psychologists have caused a demand for large square sticks instead of the rather fine ones designed by Froebel. When rings and sticks are used together they form a very effective means of indicating the outlines of carts, tram-cars, trains, and other conveyances used for transportation. Such forms are generally 'laid' on the kindergarten tables. A square or oblong of brown paper may occasionally serve as background. Forms may be kept by sticking them to a background thinly covered with plasticine. Little children enjoy pressing their rings and sticks into a layer of damp sand in their sand-trays.

Many simple rounded forms can be shown by means of the thread of the Eleventh Gift.

The laying of sticks, straws, or rushes and coloured wool is an interesting development from the above. By its means outlines of objects on a large scale can be formed. Among some of the most effective forms made by a class of three-year-old children may be mentioned a clock-face, a grandfather's clock, a drum, a bucket, a kite, a pillar-box.

Froebel's Occupations

The gifts are intended to give the child ideas ; the occupations supply a means of working them out. In the gifts the form of the material is not changed, while in the occupations it is transformed in many ways.

The first occupation is 'pattern-pricking'. This is now universally condemned, because it is too fine,

and it strains the eyesight of the children. The next is kindergarten sewing, which when worked in cardboard with rug needles[1] and brightly coloured wool forms a suitable introduction to ordinary needlework. The next following occupations are drawing, paper-twisting, plaiting or weaving, folding and cutting, the making of skeleton forms with peas and sticks, and modelling in cardboard or in clay. Some of these will be dealt with in later chapters. Other materials besides peas and sticks may be used for making skeleton forms. Thus sticks and wires may be joined by tiny corks, by balls made of pith, clay plasticine, or wax, or by such seeds as maize, acorns, or chestnuts.

Froebel's chief desire in planning these gifts was that of the most advanced educationist of to-day, viz. 'to give scope for the creative power of the child.' They may with advantage be used for the teaching of number, for the cultivation of skill, for giving the child sense-experience, for the illustrating of song and story, but our principal aim should be to lead the child on stage by stage to self-consciousness, self-revelation, self-knowledge. As Miss Blow says, the 'Gifts are instrumentalities for self-development through self-expression'.

[1] See p. 51.

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CHAPTER III

SUGGESTIONS FOR THE EMPLOYMENT OF LITTLE CHILDREN

We are reminded in a recent circular[1] that 'the baby begins his manual training in the cradle, and his manual activity about the age of two is incessant and insatiable. Everything he can reach is handled and turned about and fitted on, if possible, to something else. All the world is a workshop for him, and all that it contains tools and raw material for manual experiments'.

When very little children are admitted to our kindergartens and baby-rooms, their employment must be in harmony with their needs. Most of their education will be received through their hands, and there is practically no limit to the materials which may be used from time to time. Our chief object is to provide the child with the means of educating himself, and to this end a variety of media, obtained from all available sources, will minister much more effectively than the restricted use of a somewhat limited range of prepared material. The method employed should be calculated to enlarge the child's centres of experience by contact with real things, and also, by means of imaginative and inventive work, to bring out his latent creative powers. We cannot emphasize too strongly that it is the child's experience, the child's imagination and inventive powers, that are to grow. It is worse than useless for us to try to imagine for him, and to be too ready with suggestions as to what he should do and how he should do it. The fact that he is associated with other children, the

[1] *Manual Instruction in Elementary Schools*, p. 4.

presence of many other individuals in the class, will give him quite sufficient in the way of outside suggestion, and this suggestion, if allowed free play—neither discouraged nor too much encouraged—will be of a nature much more suited to his needs and to his power of adoption than any that can be given by an adult.

Among the kinds of material which have been found useful for little children may be mentioned sand, clay, sticks of various length and thickness, straw, rushes, coloured knitting cotton and wool, peas, Indian corn, various nuts and seeds, shells, corks, feathers, beads, wire, buttons and button-moulds, and all kinds of paper.

Odds and ends brought from home, such as cardboard boxes, pieces of cotton, silk, and woollen material, pieces of cardboard and of wadding, are often used in constructive work.

We might do well to note the words of Professor Laurie: 'Some people would make the child exact from the first. . . . Let the child alone; let him be the victim of the myriad sensations which pour in on him. The soil may be growing nothing, but it is being fertilized with a view to a future harvest. It is mere pedantry to interfere at this stage, and the result will be, or ought to be, narrow and pedantic. By all means provide raw material for the child, but leave him alone to make what he can of it. By all means give him paper, and pencils, and painting brushes, and colours, and bricks, and spades; but let him alone. We were not sent into this world to be manufactured by pedants, but to grow from our own roots and soil. Up to the age of six, whatever else is done, let there be no interference with the freedom of sensation, but rather encourage contact with all forms of existence, and promote the natural activity of the child in every direction.'[1]

A few examples of work done by very little children

[1] *Institutes of Education*, by S. S. Laurie, p. 115.

with miscellaneous material is shown in the illustration below. One day each child in a class of babies under five years was given a small handful of straw. The only injunction laid down was that it must be kept on the child's portion of the table, and not thrown about. With this the children played for a few minutes and the rustling noise which it made as they did so, seemed to afford them much satisfaction. One child broke off a small piece of straw, through which she blew or peeped. Others took single pieces and bent them into various shapes, such as a kite, a boat, &c. When the

Fig. 10. Free Play with Straw.

play was ended, the empty ears were examined and commented on, the knobs felt with the fingers, and many remarks made by the children. The spirit of child-play was present throughout, and the teacher, who seemed to be inside the charmed circle of child-thought, wisely refrained from anything suggestive of a formal talk.

It was then suggested that all should try to make something with the loose straw. The mass was handled and rustled; many tried to push it into the shape of a ball. Presently a pioneer gained a new effect which he announced by calling out ‘Oh! I've made the Little Pig's House’. As another pushed

her straw together it seemed naturally to take the shape of a cradle. Some imitated the birds and tried to make nests, others twisted the material into rough dollies, baskets, tiny boats, and beds. Several found that the complete realization of their inspirations demanded various little accessories, such as a bit of string to tie up the roof of the 'Little Pig's House', a little pig, a bit of wire to form the dolly's neck and waist, a stick and piece of paper to make a sail for the boat, a doll for the cradle, &c.

Fig. 11 Free Work with Chestnuts, Sticks, and Raffia.

A few objects made by little children with chestnuts and sticks, chestnuts and wire, or chestnuts, sticks, and raffia, are shown in Fig. 11. The tall object with three legs was called a 'camera' by the child who made it. A cradle which rocked realistically was made by pushing six pointed sticks into the chestnut, and then filling in the spaces between the sticks by winding and wrapping coloured raffia around them. This may be seen in the extreme right of the figure.

The other objects are intended to represent chairs, stools, and a table.

The 'hedgehog' and the 'dog' shown in Fig. 12 were made at home by a child of five years. The

'hedgehog' was made from a potato in which the child has stuck a number of half-burnt matches. The 'dog' is also made from potatoes and match-sticks.

Another day 'animals' were made from straw. The material was held in place by means of wire, the legs were made of sticks, the eyes of pieces of wool, &c.

The utilization of straw for the manufacture of toys has its parallel in the toys made by the children of savage peoples.

Materials should not always be chosen for the little ones. Permission to select what they need for the expression of their ideas or the representation of scenes

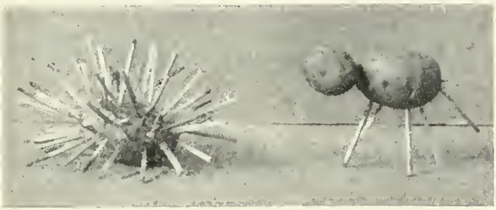

FIG. 12. A Hedgehog and a Dog.

they have observed, is welcomed gladly by young children, and facilities for such choice provides good opportunities for experimenting in various media, and for the exercise of judgement and ingenuity. One windy day in autumn a class of four-year-old children was taken for a short walk in the vicinity of the school. On their return to their seats at the kindergarten tables, they were asked to make something they had seen during their walk, and they were allowed a free choice of materials from the teacher's stock. Nearly all asked for clay, several for clay and sticks, one for clay, sticks, and green tissue-paper, while other requests included sticks and beads, sticks and wools, sticks, wool, and tissue-paper. The results were interesting, and showed that most of the little ones had been

impressed by the signs of autumn as seen in the falling leaves and fruit. The illustration shows the work of two children. That on the right is done with sticks and clay. A flattened piece of clay was pressed down to represent the ground ; into this were stuck trees made of sticks, whose branches were attached by means of clay. Around the trees may be seen a number of small balls to represent 'conkers' (horse-chestnuts)

FIG. 13. Free Expression with any Material.

which had fallen from the trees. The other child's work also represents a tree in a clay foundation. Pieces of green tissue-paper were torn up for leaves. A few of these were attached to the tree, but, in imitation of the trees outside, most of them were used to make a carpet underneath it.

Sometimes, as in the play with straw, a compromise may be made by allowing the child to ask for additional odds and ends to finish his work. Certain material may be distributed by the teacher and supplemented by other little things in response to the wish of the

child. Such permission to put his own finishing touches tends to make the work more pleasing to the child. While the children were making objects from paper, such as those seen in Fig. 13, this result was obtained by the addition of wire, sticks, &c.

Picture-Laying with Various Materials

This is great fun as an occasional treat. One day while the talks and plays were centring around the baker, the teacher suggested this picture-making. Two little girls each wanted to make the baker. One asked for red wool to make his head and body, sticks for his legs, and paper for his eyes and the buttons on his coat; another wanted white tissue-paper, from which she tore the 'baker', finishing her picture by adding a bit for his cap. One little boy, who wished to make the fire, asked for sticks and red paper. The oven was constructed from a square of sticks and a piece of paper for the handle.

When all the pictures had been laid, the teacher selected them, in order that the whole story of the baker, as far as it was shown by the children's pictures, might be represented and seen by all the children. For this purpose those pictures which were most easily read by other children were chosen. In practice, however, it has been found that children often understand each other's creations, although they are meaningless to the mere Olympian.

Paper. This material is so cheap, so abundant, so clean, so readily obtained, so easily manipulated and hence so suitable for the use of young children, that it takes a very large place among the materials provided for their first occupations.

Free Play with Paper. The delight of a baby in grasping, shaking, rattling, and tearing a newspaper is well known to the most casual observer of children. There is no doubt that such an exercise provides the infant with valuable education through the senses of

touch, hearing, and sight. The illustration below (Fig. 14) shows the result of a newspaper game in a class of three-year-olds. The three objects in the foreground are intended to represent a 'ball', a 'boat', and a 'basket', while the long roll in the centre is a trumpet, and the figures in the background were said to be a 'cat', a 'table', and an 'old man'.

A play with paper bags produced a 'balloon', a 'bottle', and a 'baby in long clothes'.[1]

Paper Rolling. Little ones love to make a roll with a piece of paper. Among objects formed from such

FIG. 14. Free Play with Paper.

rolls may be mentioned a roller and a paper-basket. The addition of wire for the handles and a stick for the yoke, gave a milkman's yoke and milk pails. The photograph on p. 47 shows a few of the simple objects which have been made by quite young children from rolls of paper.

When the class is very large and the problem of supplying paste too great to be conveniently overcome, the 'gummed squares' of paper sold at educational dépôts will be found useful. When these are used, small sponges should be provided.

Paper Twisting. Many fascinating transformations

[1] See illustration in Fig. 14.

arise from the twisting of paper. Tiny children readily convert pieces of tissue-paper into butterflies, fairies with wings, and other objects of delight to the young transformers.

The twisting of animals from paper of a somewhat stouter texture provides amusement for the children of from six to nine years.

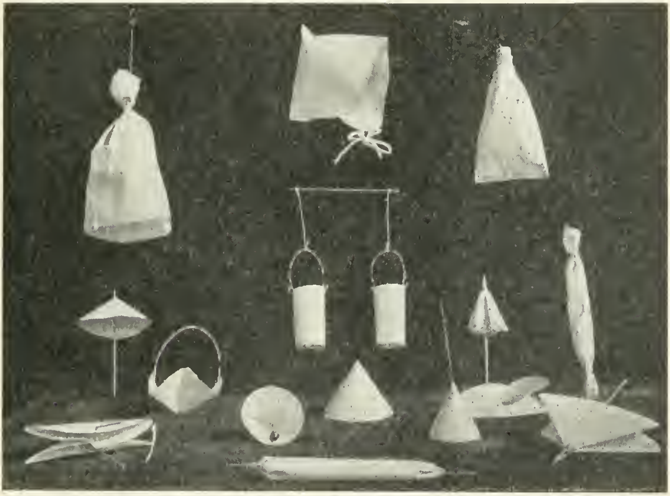

FIG. 15. Objects made from Paper, &c.

A combination of twisting with the rolling described above will often help the child in his efforts to represent the objects around him. Thus a twist of a small portion at one end of a roll of rather soft paper gives a candle. The addition of a bit of black paper for the burnt wick increases the child's delight. If about one-third of the roll is twisted, a 'bottle' may be represented. The illustration above (Fig. 15) gives a rolling-pin and Christmas cracker like those made by small children by means of rolling and twisting.

Paper Crumpling. The crumpling of tissue-paper by folding and rolling in the hand, or pinching with the fingers, is a process which is very pleasing to the child. This operation produces a crinkled effect which improves the paper for the construction of such objects as a Christmas cracker, a doll's dress, hat or parasol, curtains for the doll's house, &c. The dolls seen in Fig. 16 were made of yellow wool and dressed in paper crinkled by little children, who called them 'fairy dolls'. They made a very pretty decoration for the little ones' Christmas-tree.

Fig. 16. Paper Crumpling.

Tiny parasols, made by inserting a stick into the centre of a crumpled circle of paper, were also very bright and pretty.

Paper Tearing. This is a very good exercise for little children. It offers a facile means of showing an object in mass, and of illustrating games, nature talks, stories, &c. A rough but realistic picture of pigeons circling round a pigeon-house, which pleased the little designers very much, was made by combining the 'tearing' of very small children. Tiny towels, scarves, and other properties of the doll's house may be improved by tearing a fringe along the edge. Tails of kites may also be made by tearing up such paper as in Fig. 22.

Paper Folding. From Circle.[1] When folded in half, the half-moon will be seen. A doubling of this

[1] The 'Balmoral' wheel seen in Fig. 16 was made from a circular piece of cardboard, a piece of cane, and a stick.

folded paper gives a quadrant, for which such names as a ' kite ' will be suggested by the children.

The folding of the paper as in Fig. 15, and the insertion of two sticks, gives a pair of bellows, with which children may pretend to blow with some measure of success.

Many inventions may be made from the ' ground-plan ' thus obtained, e.g. a basket, a tent, &c.

By opening out the circle and again folding, a fan or fire-screen is formed. The children love to fan themselves with the tiny fans, especially if one end is pinched tightly together and attached to a small stick with a piece of wire.

Paper Folding and Cutting. Making Objects from Circle. A quadrant or any convenient section of the circle may be cut away and a tent formed ; an umbrella may be made with a similarly cut piece attached to a small stick. The top of the merry-go-round seen in photograph on p. 78 is formed in the same way.

By folding in halves and quarters, cutting out a small circle from the centre, folding over three pieces, and adding a feather as in Fig. 15, a three-cornered hat is formed.

Modelling with Paper and other Materials

Many interesting toys can be made by using match-boxes or small cardboard boxes as a basis. Among such may be mentioned sledges, little carts, and other miniature conveyances, tiny beds, furniture for doll's house, Punch and Judy shows, &c.

The trains shown below were made by a class of little ones, the majority of whom were just about five years of age.

For the production of Fig. 17 all the children were each provided with a piece of brown paper, two small sticks, four pieces of cork, and a pair of scissors. They were then allowed to make their own attempt without any aid from the teacher. Each child made an engine

or a carriage, and the best were chosen for teacher to photograph.

In another lesson, before they were asked to try again, the teacher provided herself with a piece of brown paper and a small cardboard box, from which she showed the children how to fold in the ends so as to form a roof and sides for their tiny railway carriage. Suggestions as to different ways of showing the windows were given.

Fig. 17. Children's Free Work—a Train.

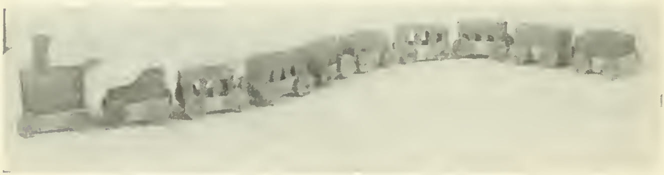

Fig. 18. Train.

The train in Fig. 18 was the result of co-operative effort; the best engine-makers of the previous attempt were allowed to make engines while all the rest made carriages. The train was made up of the best engine and carriages produced.

Sewing on Cards. This is a modification of the old kindergarten sewing. In American kindergartens very fascinating borders and simple pictures are made by the children on cards previously punched with holes. The sewing is done with brightly coloured wool, and is an excellent training in colour and design.

A somewhat prosaic equivalent may be found in

the cards to be obtained from educational dépôts and the fine laces for sewing. The designs in Fig. 19 were made quite spontaneously by a class of four-year-olds.

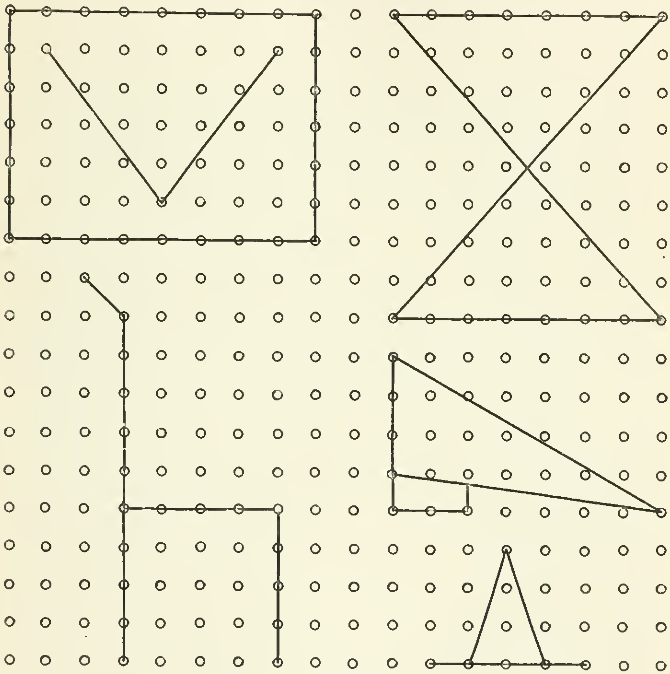

Fig. 19. Free Sewing.[1]

The media used were coloured laces and cards containing holes punched half an inch apart.

The envelope was made after a postman game played on St. Valentine's Day. A Valentine (consisting of an old Christmas card) was brought for each child.

The other objects represented are a diabolo, a chair, Cinderella's slipper, and a witch's hat.

[1] A similar exercise in winding on circles, oblongs, &c , is much enjoyed by the infants at Cray Road, Shipley.

Preparation for Christmas

During the weeks before Christmas the manufacture of presents for the home people, the preparation of toys for the Christmas-tree, and the provision of decorations

Fig. 20. Babies' Christmas-tree.

for the room offers a powerful motive for purposeful work. In order to develop the social instincts the little workers should not labour for themselves alone, but for something in which the others can share.

A photograph of a Christmas-tree decorated by the work of little children may be seen on p. 52. The Father Christmas at the top of the tree and the larger dollies were supplied by the teacher. The paper chains around the room and the Christmas crackers festooned about the foot of the tree show the co-operative work of classes of children of three and four years of age.

Most of the smaller toys were put together by little children whose ages varied from $3\frac{1}{2}$ to $5\frac{1}{2}$ years. The tender age of the little ones and the special purpose of the toys seemed to justify more preparation of material and suggestion and help from the teacher than would have been allowed under ordinary circumstances, or if the children had been a little older. Thus as it was not advisable to give them any sharp instrument to bore holes in the cardboard or the corks, or to expect them to cut out the heads of the horses or the reindeer, this was done by the teacher. The children stuck the sticks into the holes in the corks and the cardboard, and inserted the heads into slips made in the cork.

Among the articles made by little children may be mentioned wool and paper dolls, a Father Christmas, a snow-man, toy horses and reindeer, Teddy bears, tiny carts, sledges for Father Christmas, dollies' prams, tiny tambourines, drums, receptacles for sweets, and presents for older members of the family, such as paper tidies and pin-boxes for mother and a shaving-ball made for father from circles of tissue-paper.

Dolls. Since children love dolls so much, rough attempts to construct them from paper, wool, raffia, straw, or other materials are included in most toy-making efforts. The method varies with the constructor. Short strands of wool or raffia may be doubled; the neck of the doll is formed by allowing a short portion for the head, and then tying the raffia. The shoulders and arms, body and legs, may be finished as in the 'Guy Fawkes' on p. 317.

Toy Horses and Reindeer. The materials used were

oblong pieces of cardboard, four sticks, a cork for the body, another cut in four for wheels, pins for axles, a piece of brown paper for the head, and strips of red to paste around the body of the horse.

Father Christmas Dolls. The materials used for these small dolls were brown paper, wadding, gum, two or three pins, a small piece of wire and a small picture, representing the head of Father Christmas. A piece of brown paper about 6 × 5 inches was made into a tube by rolling and gumming together. This tube was covered by the children with wadding, on

FIG. 21. Toys for Christmas-tree.

which a little gum had been dropped. A small piece of wadding was rolled into a ball, leaving the loose ends to be joined on to the neck. These ends were inserted in the tube of brown paper, and the neck was formed by pinching and slightly twisting. The arms were made by pinning on bits of wadding, and the buttons by sticking bits of gummed paper or tape on to the wadding. The little picture of Father Christmas was then pasted on for the head. The top of the wadding was pinched up to a point to form the head.

The *Snow-man* was made by a similar method.

Drums and Tambourines. The drums[1] were made

[1] During later exercises stronger and more satisfactory drums from the child's point of view were made from empty cocoa tins.

from pieces of cardboard tubing in which pictures had been sent. Over the ends jam-covers, previously damped, were strained as tightly as the little hands could manage. The drum-heads in the smallest children's drums were made from gummed jam-covers, those used by the older babies were made of parchment. The latter were joined to the tube by means of twisting a piece of wire around the edge. The decoration was made by means of crayon-marking. The tambourine was made in a similar way; a hole was bored in its side through which a knot of coloured wool was tied.

The *Father Christmas sledge* was made from a cardboard box. The runners were cut from stiff paper and pasted on to the box.

Many handwork subjects will arise out of the interests developed by the study of special seasons, or the commemoration of past events. Thus, a natural accompaniment to the observation of the work of the wind consists of the making of such toys as kites, weather-vanes, whirligigs, and windmills.[1]

The simple *weather-vane* is made, as can be seen in the illustration, from a piece of tissue-paper torn into the shape of a cock-a-doodle-doo, through which is threaded a small stick. The stand is made of a cork, and the four chief points of the compass are represented by pushing four sticks into it.

The *paper whirligig* is made from a square of paper cut along the diagonals and then fixed to a rough stick by means of a pin. The materials for the *feather whirligig* consist of feathers, a cork, a stick, and a glass-headed pin. The feathers are pushed into the cork, which is attached to the stick by passing the pin through the cork into it.

The *kite* was made from tissue-paper, two sticks of unequal length, a bit of wire, and a piece of string or knitting-cotton. A square of tissue-paper was doubled and torn to shape. The two sticks were joined together by wire in the form of a cross. The paper kite was

[1] See Fig. 22.

affixed to the cross of sticks by pushing the ends of each stick through the paper as in the figure. The stick at the tail end of the kite should project a little in order that the tail may be attached. The tail in the illustration is merely a tassel of torn paper, but it may of course be made in various ways. If the children are too young to tie knots, the tail and the string for flying the kite may be attached by means of a bit of wire.

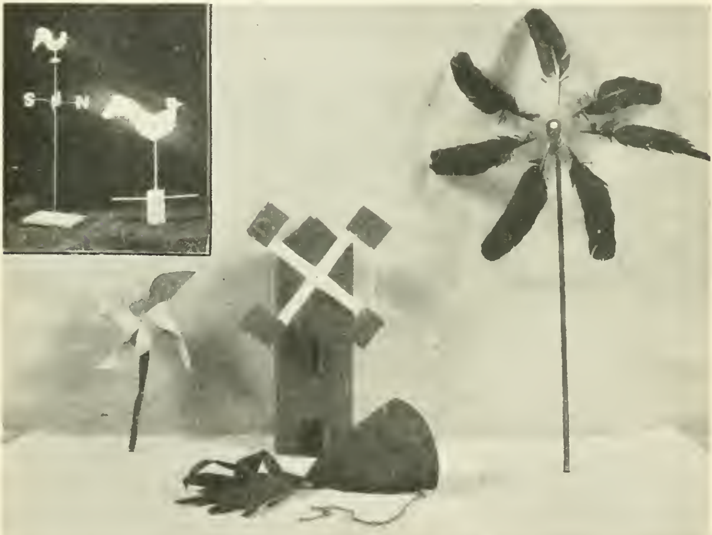

Fig. 22. Models illustrating the work of the Wind.

The *windmill* is made from brown paper, the sails from stiff white paper and coloured surface-paper.

The free illustration of games, stories, nursery rhymes, or of children's observations and experiences, should play a large part in a scheme of handwork for little ones, as it offers a ready and facile means of providing exercise for the creative element. Any and

every medium may be employed in this free work. Among the most general may be mentioned sand, clay, chalk, or crayons, and any suitable drawing-surface.

It is taken for granted that in such exercises as the above, sense-training and language-training shall go on incidentally in every lesson. Only too often our so-called sense-training exercises are almost useless, because provision is not made for each individual to have an opportunity of getting first-hand experience. Direct and formal sense-training plays a large part in Madame Montessori's system. Many of the features of this part of her work, and especially the custom of beginning the exercises by washing the hands in small basins, are well worthy of imitation, but it seems that the imitators may be in great danger of over-emphasizing the sense-training. May not all the training that the little child needs be given by more incidental and natural means? It would, indeed, be good for our kindergartens and baby-rooms if we could learn from Madame Montessori how to protect our children from undue adult interference—if we could develop in our little pupils some of that power of self-help, self-dependence, and self-government which characterizes the Houses of Childhood.

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Institutes of Education. S. S. Laurie.

CHAPTER IV

PAPER-FOLDING

A SHORT course of paper-folding will interest little children, and will serve as an introduction to paper modelling.

Paper-folding lessons, mechanically conducted, show just the kind of occupation which typifies the abuse of

FIG. 23. Paper-folding.

Froebel's system. Such abuse has rightly called down the condemnation of many critics. It is, no doubt, very easy to allow paper-folding to degenerate into mere mechanical finger-training, and it is probably hardly ever advisable to continue it without a special purpose in view.

The children must work intelligently, and not follow the teacher towards a result of which they are kept in ignorance. Their suggestions should be taken at every point; even the little ones can invent, suggest names, find out how to make objects, and be kept alive during the whole of the time devoted to such an occupation.

The short course shown in Figs. 23 and 24 is merely given as an example. Each teacher will probably

prefer to call in the aid of her pupils to invent a series of their own. The folding of objects or representations of real things seems to be more in harmony with the child's preferences than pattern-folding. Children almost invariably give a name to their inventions, although to the mere adult the resemblance often appears to be very slight.

The 'ground-plan' or foundation from which the following figures are derived, shown in Fig. 23, was made by folding a square of paper in half, and then doubling once more, resulting in a fourfold square, one-fourth the size of the original (Fig. 23A). Pockets may be made by folding over the points in various ways.

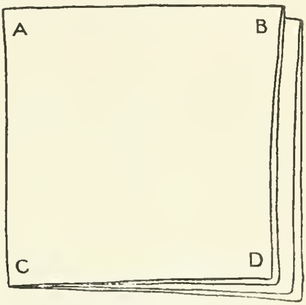

Fig. 23A.

No. 2[1] of the illustration in Fig. 23 shows one pocket; No. 3 gives a side view of a double pocket obtained by folding over two corners of the squares diagonally until the top corner rests on the bottom one.

A little child folded over all the points and called the result a purse (No. 4).

No. 5 (*the triple pocket*). Fold as for No. 4 (purse). Hold the four free corners together in the thumb and finger; three triangles will be seen, of which one (the fourfold triangle) projects towards the worker. Place fingers inside each of the triangles and press them out to form pockets.

No. 6. Take the upper square and fold D on to A. Turn paper over and fold the three remaining bottom corners on to the top corner. Press open and fold so that the point B rests on the point C. Take the point B and fold up to the top of the square obtained by the

[1] All descriptions of illustrations begin with top rows, and count from left to right.

last fold. Place fingers inside the *soldier's helmet* which results. Fold up the opposite corner to the top and '*Napoleon's hat*' (No. 7) will appear.

No. 8. Take the right-angled triangle which was called Napoleon's hat. Unfold the first crease so as to have a square instead of the triangle. Take the corner over the point B in one hand and in the other the corners of the three squares lying on each other. Pull out as far as they will go. A '*boat*' will result.

No. 10. Hold the fourfold square as in illustration (two doubled squares lying on each other). Leaving one doubled square, take the point B, fold over on to C. Fold the remaining triangle under on to the same point. Press up one of the folded sides into a vertical position, and the '*butterfly*' will be found.

No. 11 was called a '*lantern*' because of its resemblance to the lanterns carried on sticks by carol-singers at Christmas-time. It was made by folding in the four points of the two squares towards the centre, and pushing a stick through the centre point.

No. 12 was made from No. 11. Place the fingers in the 'lantern'. Hold firmly in each hand the two corners meeting in the centre of two opposite sides. Flatten out the centre of square by pressing on the desk.

Nos. 13, 14, 15, and 16 are variations of No. 12, obtained by placing it upside down and folding the free points outwards, inwards, or downwards.

No. 17. Fold again as for 'lantern' (No. 11). Instead of pressing the hand inside the object as in Nos. 12, 13, 14, 15, and 16, take each of the four sides and fold over the triangle to the centre line. Place the fingers inside the four free corners and flatten the base. This may be called a '*quiver*', and when filled with paper arrows may serve to illustrate many stories.

No. 18. Starting from the ground-form fold D on to A. Turn paper over and fold bottom corner to top as before. Turn paper over; take corner B and place it on C. Then fold the two remaining closed corners together. Fold the corners of the single outside squares over the

top. The result should be a right-angled triangle. Hold with the base towards you. Fold the acute angles over to the centre so that they touch. Turn over and repeat the process on the other side. Hold firmly in the fingers. Press out the base until it is flat. Stand the paper object on the four projecting triangles. This may be called a '*manger*'.

Fold under the four corners of No. 18 to the centre of the square. Take each of the doubled corners and press out so as to form the pin tray (No. 19). Fold back the corners of the pin tray to form an open box.

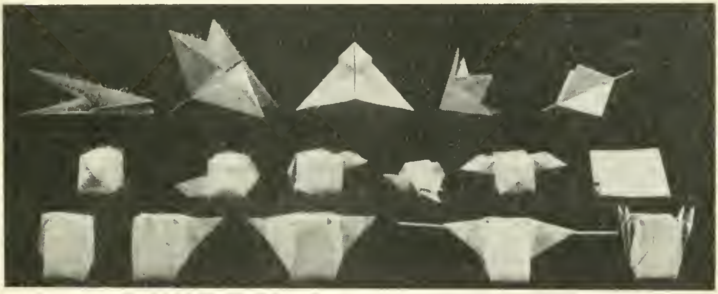

FIG. 24. Paper-folding.

Turn No. 19 upside down. Fold back the free corners. Take each of the doubled corners in turn. Open out from the object to form a right-angled triangle. Take the long side of this triangle. Fold on to the crease forming its short side. If the resultant object is made to stand on the points of these four corners a '*table with a cloth*' will be represented.

For the '*umbrella*' (No. 20), start from the ground-plan. Fold each of the doubled sides of the four squares on to the diagonals.

Ground-plan. Crease diagonals. Take two of the four corners in each hand. Press together so that two of the triangles formed by the intersection of the diagonals are folded between the other two.

To form the '*dart*' (No. 2) press out each of the doubled sides of the triangles. For the '*soldier's hat*' start from the ground-form; fold each of the corners forming the base of the triangle up to the top. The result is a square lying on the right-angled triangle. Fold right- and left-hand corners on to the central line.

The next object was called a '*frog*' by the children. Starting from the ground-plan, obtain the square on the triangle, as for soldier's hat. Turn paper over and make the same folds on the back. Place a stick right through the openings at the base and the top. The children are greatly delighted if they are allowed to spin rapidly round like a top.

Balloon (No. 6). Fold as for soldier's hat, repeating on the back the same folds as for front. Hold firmly by sides with the little opening towards you. Blow until the paper is inflated. Fold in the loose corners at bottom.

No 7. Start from the flattened balloon. Hold paper with the opening at the top. Open out one corner. Fold back so as to continue the vertical line formed by creasing back the last triangle to the edge of the doubled edges of the paper. This gives a right-angled triangle. Take the top corner of the long side in the right hand, and the right angle between the thumb and finger of the left hand. Press in until it touches the centre line, when a smaller right-angled triangle will appear. Repeat with the opposite corner on the same side of paper. Hold the two projecting pieces in the hand. Inflate as for balloon.

No. 8 is the same as No. 7, but placed in another position.

No. 9. '*Aeroplane.*' Fold as for Nos. 7 and 8. Reverse paper and repeat the same folds on the other side. Bisect the base of the right angle by folding each of the acute angles till they touch the centre line.

No. 10. Fold as for the aeroplane. Inflate the central part, and the result is generally called a '*teapot*' by the children.

Pillow (No. 11). Fold as for the 'top'. Hold with the small opening towards you. Fold each of the free corners on to the small opening. Turn over and repeat. Hold the loose corners firmly. Inflate, and by pulling out the sides a little a '*cushion*' is formed.

No. 12. Start from the ground-plan with the right angle towards you. Bisect the base of the triangle by folding each of the acute angles till they touch the centre line. Turn paper over and repeat. Press the hand into the opening and flatten the base.

A '*cup*' (No. 13). For the handle of the cup take two of the corners, press together until they stand away from the object.

No. 14. Fold as for No. 13, treating the other two corners in the same way.

No. 15. Place a stick through the centre, adding a little gum or paste to keep the corners together. This is generally called a '*palanquin*'.

No. 16. For the '*paper basket*' flatten each of the projecting corners close to the sides of the object.

Books of Reference

The Kindergarten Guide, by M. Krans-Boelte and J. Kraus.
The Kindergarten, by H. Goldammer.
Froebel's Occupations, by K. D. Wiggin and N. A. Smith.

CHAPTER V

MODELLING IN PAPER AND CARDBOARD

Paper modelling is an exceedingly valuable occupation for young children. Their attempts to construct the forms of common objects will lead to a quickened sense of observation, and to an increased interest in their surroundings, while, incidentally, such constructive work offers a valuable means of gaining practical ideas of number, of measurement, and of form. By the exercise of a minimum of effort the 'real' things so dear to the little child can be made in endless variety. Paper modelling forms a natural link between the paper folding, cutting, and other simple exercises of the babies' room or the kindergarten, and the cutting-out of garments, the cardboard modelling and wood-work of the later stages. It is a favourite home occupation, for the materials needed are so cheap and abundant as to be within the reach of every child, however poor he may be. Abundant scope for invention, and for the exercise of individual initiative can easily be given, and by correlative exercises increased interest in the literature, history, and geography lessons is often cultivated.

Materials. Most of the materials required can be obtained easily in the simplest home, and thus the child is able to occupy himself whenever he wishes.

Paper. Any kind of stiff paper is suitable. Cartridge or brown paper can generally be obtained ; when prettily tinted art-papers can be afforded, scope is offered for the development of taste, by allowing a choice of colours.

There should be a gradual progression from ordinary brown paper through stiff cartridge paper to thin cardboard.

Scissors as for paper cutting.

A *ruler* and *pencil* will be needed when exercises in measurement are given.

Models can be stuck with home-made paste [1] or with *Gloy*, purchased in large jars and supplied to each child in small tube-shaped bottles. Gum has a tendency to appear on parts of the model where it is not wanted, hence it is not suitable for the use of young children. For very simple exercises *gummed papers* may be used. When this is done, damp *sponges* should be provided for moistening the papers.

Paper fasteners can be used for joining up the models. A pretty way of fastening them is by punching holes and tying with brightly-coloured wool, narrow tape or ribbon.

Grading of Difficulties. When a very simple ground-plan is chosen for first lessons, such as that obtained by means of bisecting a square in two directions as in Fig. 25A, 1, the children will be able to invent and work alone from the beginning. A frequent change of ground-plan and a gentle grading of difficulties may be ensured by increasing the number of subdivisions in the form chosen, and by cutting away portions of the central ground-plan when new ground-plans are desired (see Fig. 25A, 1). All the ground-plans shown are obtained by folding in halves and quarters, and thus bisecting the spaces. This is easier than trisections, which may be practised in later lessons. After working for a period on ground-plans of varying size and shape, the children should proceed to work from *measurement*. This offers many opportunities for valuable work, provides exercise in drawing with a ruler, and thus leads on to drawing to scale, geometrical drawing, &c. A few exercises with squared paper may form a transition stage from the work on folded ground-plans to that from measurements.

Variety in method. Side by side with variety in plan a variety in method will contribute towards the

[1] Ordinary paste made of flour and water will keep for a long time if a little oil of cloves is added.

development of versatility and alertness in the pupils. At first initiative may be encouraged by free experimentation on a simple ground-plan folded at the teacher's suggestion. During such work the teacher will encourage and stimulate the child to do what he wishes, but will not suggest too much. At this stage it is very important that the child should feel his own power, and not depend on the stimulus of adults. A habit of dependence formed during this early period is often prejudicial to independent work, while, on the other hand, judicious opportunities for realizing what he can do will produce a self-reliant and independent worker. After the preliminary opportunity for free work the child may be asked to work from simple models or from descriptions, while an occasional exercise in working with the teacher may be necessary as a training in technique. Thus in the work shown in Fig. 25, Nos. 1–14 (two top rows) consist entirely of free work done on ground-plans prepared under the directions of the teacher. At first the cuts were suggested, and only the modelling left to the children, but in the illustrations shown in Fig. 26 many of the cuts were made by the pupils.

This experimental work was succeeded by working from models, then by more opportunities to experiment, after which the teacher and children worked together to make a model of a box.

It is perhaps necessary to add that when the children are making a model under the leadership of the teacher, the aim and scope of the lesson should be indicated as clearly as possible before the lesson is begun. This may be done in various ways, e.g. by means of a drawing on the blackboard, a carefully-thought-out description, a presentation of the model it is proposed to make, or by any other method which the needs of the case demand. It is still possible to find a class of children interpreting secret signs, and blindly following directions with the object of reaching a goal of

which they are kept in ignorance. No better means than this can be devised for converting bright and eager children into machine-like automata.

The following simple lessons were taken with a class of children, the majority of whom were only just five years of age.

First Lessons

Experimental Modelling on a given basis

(a) *Cuts suggested.*

Lesson 1. A square of paper was given to each child, who in imitation of the teacher folded along both

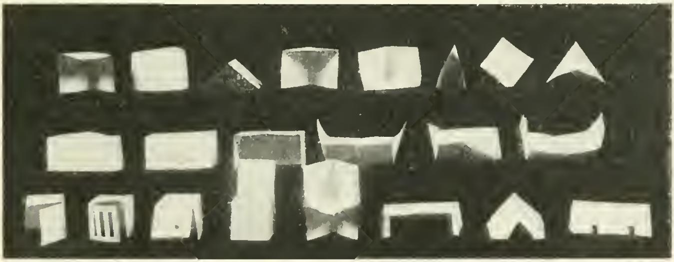

Fig. 25. Paper Modelling.

diameters, as in Fig. 23A.[1] The teacher then suggested making a cut along one square down one of the centre lines. When this was done, each child was invited to make something. The response was instantaneous. Little creations appeared, and in a very short space of time the children were ready to give to the things they had made such names as sheds, houses, chairs, and bonnets (see Fig. 25, 1–6). In Nos. 4 and 5 of Fig. 25 a variation was made by folding the corner of the centre square along the diagonals. They were next allowed to cut away square B when they again

[1] In folding ground-plans for paper modelling, the paper should, as a rule, be opened before a second fold is made.

experimented, producing the bonnet, the bag, and the soldier's hat (Fig. 25, 6–8).

Lesson 2. Each child was given an oblong piece of paper, obtained by cutting a square in halves. From this oblong the children formed their ground-plan by creasing the eight small squares and cutting along the continuous lines as in figure (5) below. They were then invited to model an object from the piece of paper, and the objects in the centre row of the illustration

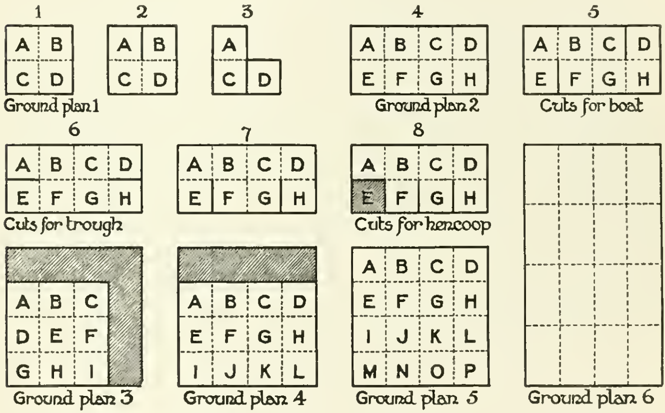

FIG. 25A.

(Fig. 25) show some of the results of their efforts. As in 1, 2, and 3 of the same illustration, Nos. 9 to 12 are identical when held in the hand, and were modelled by pasting E on to F, and D on to C; but the objects wore entirely different aspects according to the manner in which they were placed by the children. The names varied with the modellers—thus No. 9 was called a table or a cupboard; No. 10 a seat, a sofa, or a chair; No. 11 a tent, a fireplace, or a shed, and No. 12 a cradle; No. 13 was also a cradle made by folding E on to F, H on to C, and then on to G. Nos. 9, 10, and 11 might more naturally have been modelled

from other cuts, and No. 13 by cutting away H. Alternative methods of modelling such objects were demonstrated to the children at the close of the lesson.

(b) *Cuts made by children without suggestion.*

In a subsequent lesson the children made their own cuts. The boat (No. 14) was made by cutting between A and E and D and H, and folding A half-way over E, and D half-way over H. The cupboard (No. 15) was made by cutting as in Fig. 25A (8), and by folding G over F and H over G. No. 16 was more difficult

FIG. 26. Paper Modelling.

because the spaces between the bars had to be cut away. It was called a 'hencoop'.

The chair (No. 18) was made by cutting between A and B, B and C, and C and D, and pasting A on to C, and D on to A.

The chair (No. 19) was made by cutting between E and F, F and G, and G and H, pasting F on to G, doubling back A, pasting it on to B, and D on to C.

Inventions on the oblong ground-plan (containing eight squares) are shown in Fig. 26, 1–3. No. 1 is a chair.

No. 2 was said by the child who made it to be 'Jack Horner's corner', and No. 3 was called a 'house', a 'stall', or a 'porch'.

Working from Models

(a) *With teacher.*

A little practice in working from models was next given. For the first exercise of this kind the teacher prepared a large model of a tent by cutting as in Fig. 25A (6), pasting these squares over each other and cutting away their projecting halves. Since, during a recent lesson on the story of Abraham, the children had seen a drawing of his tent, the teacher cut the sloping side as in Fig. 25, pressed up the flap thus obtained until it took a horizontal position, and then asked the children what such a tent would do for. Some of them called it Abraham's tent, and compared it with the drawing that had been made. Other methods of making doors were suggested by the children, such as cutting up the centre of one end and folding back the corners, as in No. 20 of Fig. 25, or cutting doors for 'a little house', as in No. 22 of the same illustration. Each child then modelled the tent he or she chose.

(b) *Individual work.*

In the next lesson the children were given practice in working from individual models, which had been prepared for them by another class. During this work, which was chiefly confined to the children's own investigations without any aid from the teacher, the concentrated attention and the general results showed the wisdom of giving children opportunities for individual work.

Gradual Introduction of New Ground-plans

When the first principles of arithmetic are taught through the medium of paper modelling, the number of squares in the ground-plans introduced to the children should increase gradually. Thus the first ground-plan may contain 4 squares, the next 6 (obtained by cutting away 2 squares from the oblong), and the next 8.

The next may be developed from the square containing 16 smaller squares by cutting away the squares shaded in the figure, and leaving a ground-plan of 9 squares. Then an oblong 4 squares by 3 squares may be obtained from a similar square by cutting away one strip, and lastly the square subdivided into 16 smaller squares may be taken.

Should it be necessary to continue these lessons a larger oblong (obtained by folding a larger square in halves) may be divided by folding into halves, quarters, and eighths in the direction of its long side, and into halves and quarters in the direction of the shorter side. This gives an oblong divided into 32 squares. This oblong may be reduced as before by cutting away strips, and the number lessons may be continued on a network of 20, 24, 28, and 32 squares.

Other forms may be introduced, and the divisions may be made in a variety of ways.

Objects made by Children from Oblong
(4 squares by 3)

The experimental method was again tried after the children had made cuts, at the suggestion of the teacher. The resultant objects were chiefly reproductions of previous forms obtained from the square and the oblong. One child used the remaining strip for a table, and named her model (Fig. 26, No. 4) ‘a stall at the fair’.

The children cut between A and E, E and I, D and H, and H and L, and from this form most of the objects shown in the illustration were obtained.

The first object made was a box from a large model prepared by the teacher. The box was made by pasting A and I on to E, and D and L on to H. No. 5 was a co-operative effort, and consisted of two boxes. One child suggested that his box should be used as a lid, and that his neighbour's should form the box. No. 6 was called ‘a bed’, and was made like

the box, with the exception of the centre square at one end, which was turned up for the head of the bed. Nos. 14 and 15 were made in just the same way, but again co-operation took place, and the paper objects became two engines passing each other.

The makers of Nos. 7 and 11 made wheels for the cart and the wheelbarrow from the remaining strip. The child who made the wheelbarrow demanded sticks to complete his object. No. 8 was made by letting the edges of the small squares overlap, and was called 'a bath which you can pull along'. No. 9 was 'a cradle', and was made by slanting up the outside end squares until they meet in a point, and pasting the centre pieces E and H over them. The boat (No. 10) was made by just letting the outside squares overlap a very little over the centre square. No. 12 was called a 'corner of a play-room', and was made from another cut; No. 13 was called the 'house of Jairus' daughter'. Various names, such as a 'tunnel', a 'passage', and a 'path', were given by the different makers to No. 16. No. 17 was made like the tunnel, with an added square of the strip, which was pasted on for the flap, and was called the 'mouse-trap'. No. 18 was called a 'fire-place with a chimney'.

Objects made from Square Ground-plan divided into Sixteen Smaller Squares

Only a few of the objects shown in the next illustrations (Figs. 27 and 28) were invented by children, such as 1, 2, 3, 5, 6 and 9 of 27, and 2 of 28; the rest are shown as suggestions as to further work.

1. The *bonnet* was made by folding on the centre of square between B and C, and then by pasting A on to D.

2. The *bag* was made from the bonnet by folding on the opposite side, and by pasting M on to P. A strip of paper was added for the handle.

3. The *chair* was made by cutting between the

squares E and I, and H and L, and by pasting E on to I, and H on to L. Legs were added of folded paper.

4, 5, and 6. *Box*, *basket*, and *house*. Cut between the squares A and B, C and D, M and N, and O and P. Complete box and basket by pasting A and D inside B C, and M and P inside I and O. Add a handle to the basket. The shed was a child's idea, and was made by pasting A on to D, and M on to P.

FIG. 27. Paper Modelling.

7. *Pin tray*. Cut as before. Paste B C and N O half across A B M P. Finish by rounding off projecting corners.

8. *Grocer's scoop*. Cut between the squares A and B, and C and D; cut away (along the diagonals) half the squares M and P. Paste A and D inside B C. Attach a strip of paper for the handle by means of paper fasteners.

9. The *hut*. Cut between the squares A and B, B and C, C and D, M and N, N and O, and O and P. Paste B on to C, N on to O, A on to D, and M on to P. This is the pattern on which the little house shown in Fig. 30 was made by a child at home, and also the

farm-house, granary, stable, and other outhouses shown in the farm. The arrangement of doors and windows can of course be varied *ad infinitum*.

10. *Manger*. Cut as for hut. Paste B on to C and N on to O. Fold back A E I M and D H L P. Paste A on to D and M on to P.

11. *Saucepan*. Cut between the squares B and C, H and L, E and I, and N and O. Paste B on to C, H on to L, E on to I, and N on to O. Fold in the corners of the squares A D M and P. Insert handle for saucepan.

12. *Basket*. Made like saucepan, with a different handle attached.

13. *Cradle*. This was invented by a child from the same cuts as 4, 5, 6, and 7. Paste A on to B, C on to D, M on to N, and O on to P; then paste A B and M N so that they slightly overlap C D and O P.

14. *Coal scuttle* and *small scoop*.

Coal scuttle. Cut between the squares B and C, H and L, and N and O. Cut away (along the diagonals) half of A D and M. Paste B on to C, H on to L, and N on to O. Stick on small handle at back and fasten the other handle with paper fasteners.

Make the *small scoop* like the grocer's scoop, p. 73, Fig. 27, 8.

Objects made from Oblong Ground-plan divided into Sixteen Oblongs

1. *Boat*. Cut between A and B, C and D, M and N, and O and P. Form a boat by making a small triangle on the inside of A D M and P, overlapping on to B C N and O, and cutting off the projecting ends.

2. *Bed*. Cut between A and E, I and M, D and H, and L and P. Paste A and M on to E I, and D and P on to H L.

3. *Cradle*. Cut through the lines separating A and B, C and D, M and N, and O and P. Fold A E I M and D H L P into a vertical position. Paste the lower half

of A D M and P on to the adjacent half of B C N and O. Slope sides of the head and foot of the cradle from the points where they join E J and H L respectively, to the sides formed by B C and N O. Add rockers.

4. *Perambulator.* Make the body of the perambulator like that of the cradle, adding wheels and a handle instead of rockers.

5. *Push-cart.* Cut along the lines separating A and B and B and F, M and N and N and J; cut away D and P

FIG. 28. Paper Modelling.

and half of A B and C, and M N and O. Paste the remaining half of B and M on to F and J. Notch the sides of A and M to form the shade of the cart. Fold A E I M over for the shade and H L down for the feet, turning up one quarter of H and L. Add the wheels and handles.

Miscellaneous

(Fig. 28, row 2)

The first *chair* and *table* were made from the oblong folded into sixteen smaller oblongs, or into thirty-two squares. For the chair the oblong, Fig. 25A (6), was reduced to a smaller one by cutting away four oblongs from one of the short sides.

The next table, the cupboard, and Cinderella's coach are made from a square creased into sixteen smaller squares.

The *table* is developed from the box (No. 4 of Fig. 27) turned upside down.

The *cupboard* is made by cutting away A, and cutting along the lines separating B and C and C and D.

The *box* is made from an oblong divided into thirty-two squares. This ground-plan is obtained by dividing the long side of the oblong into eights, and the short side into fourths, cutting as above and pasting 3 on to 4, 6 on to 5, and repeating on the opposite side. The shaded part may be cut or folded over.

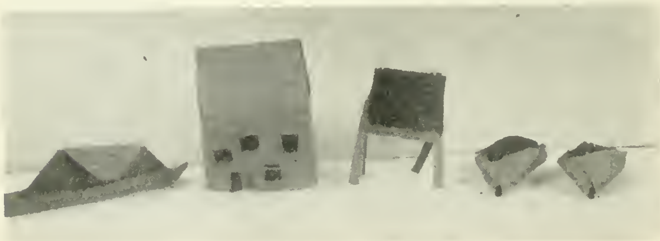

FIG. 29. Paper Modelling. Homework.

If cut, the triangular points should be turned back to form handles for the lid of the box.

Cinderella's coach. Cut between B and C, H and L, and E and I. Paste B on to C, E on to I, and H on to L. The squares A and D are folded in half along the diagonals so as to suggest a hood (which may be turned up or down) on the top of the coach. The squares M and P are folded inwards in the same way. The coach is finished by the addition of wheels. The team of rats was cut from doubled paper by children of five years of age, and harnessed with a piece of raffia.

Homework

The children's interest in paper modelling is so great that numbers of little models are made at home and brought to school for admiration and approval. Such exercises often show the results of close observation.

The objects in Figs. 29 and 30 are selections from such homework brought by a class of six-year-olds, and include two houses, a blackboard and easel, and a pair of slippers. The larger house, made in wall-paper, has windows in the slanting roof, and is after the model of an old house in a street not far from the child's home. The blackboard and easel is a miniature property for playing teacher, and the slippers show a budding capacity for planning tiny garments.

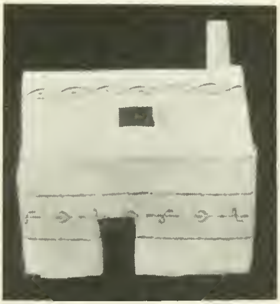

Fig. 30. Paper Modelling. Homework.

Co-operative Work

St. Giles's Fair. Year by year in the historic city of Oxford this old pleasure fair —a survival of the fairs that were generally held in days gone by—is visited by old and young. Since it would be futile to expect attendance at school, the summer holidays are so planned as to include and terminate with the two days of the Fair, which takes place in September.

During 'Fair Sunday' and the following Monday and Tuesday, family reunions take place, and the hospitable housewife keeps open house for the visitors who arrive from far and near. Indeed the Fair forms an important feature in the calendar, marking off the end of the summer days, and the beginning of fires and winter curtains.

Children return to school after the exciting experi-

ences of the rides on the roundabouts, or in the great wheels, the swings in the swinging-boats, the slides of the helter-skelter, the throws at the hoop-la, the 'shies' at the coco-nuts, and the feast on sausages, gingerbread, brandysnaps, Banbury cakes, and other goodies of which an orthodox fair feast consists. One may well believe that the most fascinating fairy tale, the most interesting nature talk, will pale into insignificance beside the memories of the wonders of the Fair with which the children are bubbling over. Hence the

Fig. 31. St. Giles's Fair.

natural and true psychological course lies in the discussion of the marvellous Fair experiences.

The stalls in Fig. 31, made from sticks and brown paper, are simple enough for children of any age from five years upwards. If the little ones are at all familiar with paper modelling, a stock of suitable materials and permission to reproduce what they have seen will result in stalls of very varied patterns and sizes.

The caravan is made by pasting a cover of brown paper over a cardboard box. The windows can be put in in the child's own way. The shafts and the axles are made of sticks, and the wheels of cork.

The body of the horse is made of cork; the head, of a dried kidney-bean or a piece of cork; the mane and tail, of raffia.

The swinging-boats, 'birds' of the roundabout, and seats of the great wheel were made by children of about five years of age, and fixed in position by the teacher.

The 'birds' were made from corks, feathers, sticks, and beads in imitation of a peculiar roundabout which visited the Fair.

The roofs of the hoop-la and the roundabout were made from a circle of paper, as described on p. 49.

As similar fairs are probably held in most places, it was thought that the illustrations might be of general interest.

Fig. 32. The Farm.

Working from Models

The farm. Most of the models in Fig. 32 were made by a class of children of between six and seven years of age. The making of the farm-yard was preceded by a detailed discussion of a farm and its outhouses. The subject of this farm possessed additional interest for the children, because it was based on the home of their class teacher. Before the models were begun many blackboard drawings of the outhouses were made to illustrate talks, and pictures of other farm-yards were shown with which the children could compare a farm at Binsey, which most of them had visited.

The method employed in the case of the larger models was that of supplying the children with copies, fastened with paper fasteners, and inviting them to make

similar ones. The children could examine their models, open them out flat, and they soon completed their own.

The farm-house was too large for a child to manage, so it was made by the teacher. The granary in the model is immediately to the left of the house, and was mounted on bricks to imitate its elevation as protection from damp and from rats.

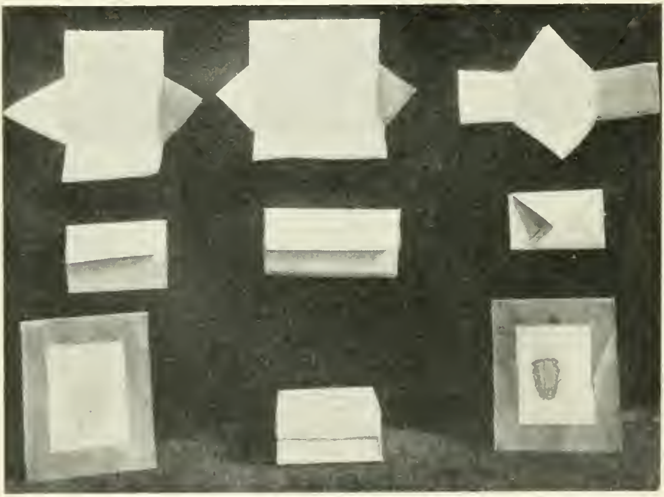

FIG. 33. First Exercises in working from Measurement.

Working from Measurement

Preliminary Exercises

During the folding of network plans for paper modelling preparatory exercises in measurement may well be taken. The *papers* supplied, whether square, oblong, or triangular, usually *measure an exact number of inches.* Before a ruler is introduced these may be measured by the use of the *tablets* of Gift VII, or of the

inch cubes of Gift III. The introduction of the inch as unit will help children to trisect a 3-inch square by measuring off 1 inch and then halving the remaining space. The children will also see that in a 4-inch square divided into 16 squares, each of the smaller squares measures 1 inch.

Squared paper will be found very useful for helping children to acquire practical number concepts. If ruled in inch squares a few exercises will form an introduction to measuring plain paper. The box shown in Fig. 33 was made from a piece of squared paper 10 inches square, and the lid from a piece 6 inches square.

Working with ruler. This work gives many opportunities for the teaching of simple arithmetical principles, and the planning out of objects may often profitably be done during the number lesson.

Making a Picture-frame

(Age of children six to seven years)

(a) *Children's experiments.* The children were each given a piece of plain white paper measuring 12 × 5 inches. They were told that they must now learn to work without folding, and since the paper supplied had no squares like that used in the last lesson, they were asked how this could be done. A little thought decided that with the aid of a ruler and pencil the work could be planned out beforehand.

After understanding that the hole cut for the picture must be square or oblong, not round or oval, they set to work. Several different patterns were devised. Some of them may be seen in Fig. 34.

No. 3 was made by folding over a strip at the bottom and on each of the sides.

(b) *Discussion and selection of the best model.* The best designs were placed on a shelf in front of the class, while the merits and demerits of each were discussed. It was found that a frame constructed of stiff paper stood better when made like the first one

in Fig. 34, because none of the back was cut away. Hence this was adopted as the class model to be made of better paper in a subsequent lesson.

(c) *Gathering up children's experiences.* All the class joined in giving a description of their experiments, but the makers of the approved design took a leading part. This was not only valuable as a means of laying an intelligent foundation for the constructive work, but also as an exercise in clear and concise language.

The part played by the teacher consisted of interpolating a searching question here and there, as steps were omitted or insufficiently dealt with.

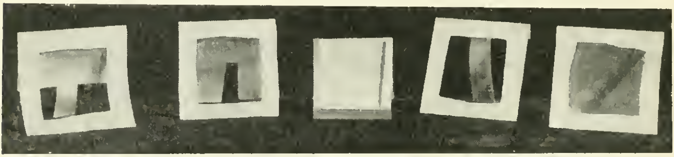

Fig. 34. Children's Experiments.

(d) *Planning, measuring, and ruling.* The account ran somewhat as follows: 'First I measured the paper and found that it was 12 inches long and 5 inches wide. Then I put the short edges together and folded it in half like this (doubling the paper). I measured the doubled paper and found it was 6 inches long and 5 inches wide. I laid it on the desk, measured and marked with my pencil 1 inch from the right-hand side of the paper and 1 inch from the left-hand side, and I found 4 inches left in the middle. I drew two vertical lines. I measured 1 inch from the top of the paper and 1 inch from the bottom, and I found 3 inches left in the middle.'

Suggestions for Improvements

It was found that up to this point the method outlined by the children coincided almost exactly with

that followed by the teacher in making her own model. A glance at the children's models showed that, owing to a lack of accuracy in measuring and ruling, their plans had not been faithfully followed. Therefore a little practice in placing the ruler, in marking inches, and in ruling lines was found necessary. During this practice the children discovered that it was easy to get the lines right, because the ruler measured 'just a little bit' less than an inch in width.

1. *Cutting.* The children had started to cut by making a hole with the point of their scissors in one corner. As it was found that this made the inner line of the frame uneven it was decided that it was not a good method, and an alternative method was called for. 'Begin in the middle,' suggested one child. This suggestion was taken and the teacher cut from the centre of the square along each of the diagonals, because, as a child remarked when she had cut the two upper ones, 'that will make it easier to cut along the top.' After the four right-angled triangles had been cut some one suggested that a pretty frame might be made by folding back the points.

2. *Pasting on the back.* Suggestions were taken as to the best method of keeping the picture in place. One thought that if strips were cut vertically from top to bottom of the back, these might be pasted down for the reception of the picture. Finally it was decided to cut an oblong 1 inch shorter and narrower than the picture-frame (viz. 5 × 4 inches), to paste three sides of this to the frame, leaving the fourth open for the insertion of the picture.

Construction of Class Model

The teacher showed the children the model she had made. After measuring they found it was made just like the best one they had chosen, only more carefully done. The directions were briefly summarized on the

blackboard, and the children set to work to make their final model.

Various objects for use in school or at home may be constructed from stiff paper. The envelopes shown in Fig. 33 are large enough to hold drawing and exercise books.

No. 4 was made from a stiff piece of paper 20 × 20 inches.

This was too long to be ruled, hence when the points 16 inches from the bottom and 4 inches from the top were marked on each side, the 4-inch flap was folded over, and the 16-inch doubled to form the bag.

Burns's Cottage

While the children are reading or learning some of Burns's beautiful lyrics, the humble circumstances of his early life may be illustrated by allowing them to make a model of the 'auld clay biggin' in which the immortal poet was born, and where he spent the first seven years of his life (1759–66).

During its construction an account of the simple kitchen with its archaic sleeping-place set in the thickness of the wall will no doubt prompt the children to construct such a bed in the interior of their miniature houses. The position of the stables at the other end of the house, and in direct communication with the living-room, will be indicated, and in imagination the children will form a picture of the infant Robert as he toddled through to watch his father tend the horses, or started out with him as he went to plough his land. By such personal touches the children's interest in the poetry is heightened, and they are helped to picture the scenes with greater clearness and sharpness.

The model in the illustration was made from a post-card after a visit to the cottage.

Suggested method. While Burns and his poetry is the centre of interest, show the children a picture of his cottage, making any remarks that may be thought

necessary. Ask them to suggest how they would set about making it, and what materials they would need. Give some rough cheap material such as brown paper, and let them experiment. Do not allow too much time for this, as the experiment is merely one stage in the work, and time must not be wasted. Perhaps five to ten minutes should suffice. When all have made an attempt, criticisms on the results should follow. Compare the relative proportions of the length, breadth, and height with those in the picture. Note any good points in individual models. Select models in which the proportions appear to be just; let the children measure them. Or ask the children to suggest pro-

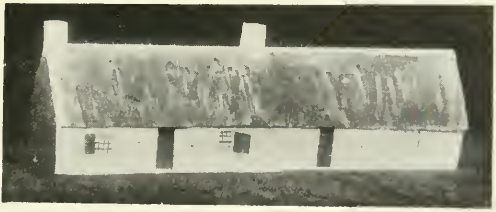

FIG. 35. Burns's Cottage.

portion, to fold a piece of paper in accordance with such suggestions, and to compare with the picture to see if the result looks right.

If the actual measurements of the cottage are known, they might be given, and then the children could work to scale. If not, eye-measurements must be relied on. Before the house is finished talks about the home-life of the immortal bard might suggest such additions as the bed, the stalls for the horses, and the back door through which the animals were led in and out. The separate piece of paper of which the roof is composed should be accurately cut and folded; then the model might be temporarily fixed together. The painting of the roof, doors, and windows in water-colour must be done while the paper is flat.

The model in the illustration was made from stout cartridge paper.

The piece for the roof measured about half an inch more than the roof of the cottage, as it was to project in imitation of the overhanging thatch. It was painted in sepia.

Although at this stage it may not be necessary for the teacher to show the children a prepared model, it goes without saying that no teacher can conduct a successful lesson unless she has at least *thought out* a plan of making one before she starts her class doing it ; and so many difficulties occur in the course of the work that it is always safer for her to have the experience and knowledge of possible difficulties, only to be obtained by making one herself.

She must, however, exercise due restraint in offering suggestions to the children. Perhaps her model may be shown at the right psychological stage, but not until the children have had opportunities for planning and the exercise of their judgement.

Cardboard Modelling

The introduction of cardboard offers to the children a series of handwork exercises requiring great care in planning and execution. The training in measurement and in planning given in a course of paper modelling will help the children to look ahead, but much more exact and accurate work will be necessary when cardboard is introduced. The rigidity of the cardboard, and the fact that it possesses a thickness which must be reckoned with, make it a good introduction to a course of woodwork when the simpler forms of woodwork cannot be taken in the lower stages.

Cardboard modelling should not be taken with children below the age of nine years. The greater demands made on the children in the direction of accuracy and exactitude will limit the first work to very simple models.

Materials. Cardboard of medium thickness.

Rulers with metal sides.

Knives. The safest knife has a sheath or protection for the finger when cutting.

Pieces of tin or cardboard for cutting on.

The objects shown in the illustrations were made by boys of ten or eleven in St. Barnabas Boys' School, Oxford, under the instruction of Mr. Howells. This handwork is a recent addition to the curriculum which has been welcomed by the boys and appreciated by the parents. It is worthy of note that all the models are such as would be acceptable as presents to parents or to younger members of the family. After the objects

Fig. 36. Cardboard Modelling.

have been taken home frequent requests for duplicates have been made.

Pencil-boxes and other useful articles have often been constructed for the use of other classes in the school.

Throughout the course, efforts were made to render the exercises educational, and to keep them as near as possible to the child's interests. The method adopted in making the little case shown in Fig. 36 is typical of the general plan of the lessons.

A finished case was shown in use as a receptacle for cards. The pattern was worked out by the boys ; the folds were prepared by cutting half through the thickness of the cardboard with the knife. When the flat pattern was cut out the children fixed it together, and

then saw the need for retaining the four flaps at the bottom as a means of strengthening the base. The semicircular hole was not cut until the children grasped its use as a means of rendering the cards more accessible, and so facilitating the process of removal.

As soon as the main details of the pattern had been grasped it was repeated in varying shapes and sizes by different boys, and applied to different uses. One made a case for father's playing-cards, another a spectacle-case, a third a tiny one to contain his india-rubber, which was likely to become soiled if it remained loose in the pencil-box. The little case in the illustra-

FIG. 37. Cardboard Modelling.

tion was made by a boy as a receptacle for the small pictures of generals which he was collecting. A number of the pictures were placed together and measured. Then the plan was drawn and the model made up.

Correlation with other Subjects

Cardboard modelling correlates naturally with the teaching of geometry and arithmetic. It may also occasionally be used to illustrate other lessons, e.g. history. Properties for the dramatization of history may be made, and castles illustrating the various periods may be constructed by classes of children work-

ing in co-operation. Thus the various kinds of keep used in the Norman period, e.g. the square keep shown in Fig. 38, and the shell-keep when the central space

FIG. 38. A Norman Castle.

was left clear and the buildings were constructed around it.

The keep shown in the illustration was modelled from a picture of Rochester Castle.

CHAPTER VI

LIGHT WOODWORK

'The origin of Light Woodwork,'[1] says Mr. J. H. Judd, 'is shrouded in mystery. No one can write its history. We find it in Egyptian temples, Chinese joss-houses, Japanese houses, Moorish casinos, and Swiss chalets, in civilized and uncivilized countries, and broadly, wherever the human race has found sustenance and habitation.'

Its addition to the curriculum of our schools is a recent development, and shows the determined efforts that are being made to co-ordinate the handwork of little children with the woodwork of the older boys.

Until recently it was supposed to be possible only with very small classes of ten to twenty children, but the experiments of such enthusiastic pioneers as Mr. Turner, Wimbotsham School, Norfolk, and Miss Thwaites, Leyland, Lancashire, have shown that it may successfully be taken with classes as large as thirty.

Educational Value. The love of hammering seems to be innate in the young child. The baby delights in pounding rhythmically with his fists or in banging vigorously with any object he can grasp. Therefore, when the time comes to introduce tools, the hammer provides the child with congenial and profitable exercise for the development of hand and arm.

Toys made of wood are more solid and durable, and as a rule bear a closer resemblance to the real things of everyday life, than those constructed in the more flimsy materials. Hence working in wood seems a form

[1] 'Light Woodwork.' A series of articles in *Educational Handwork*, by J. H. Judd, Manchester, April 1911.

of handwork well suited to the needs of the child during the period (seven to ten years) when he is becoming dissatisfied with crude suggestions of real things and demanding a more finished product. In some cases the very presence of scraps of wood and of a hammer and nails will stimulate the child's love of doing. His delight on beholding a finished toy will incite him to fresh efforts. When the work is continued on educational lines the making of simple articles may call out his ingenuity, develop the virtues of patience and perseverance, and prepare the way for the little worker to become a capable and efficient adult.

Connexion with Home Life and with Other Subjects

It is sometimes thought necessary for the child to spend several lessons in drill exercises. This should not be, for his early products should be rough and simple, and such as may be converted to some immediate use in connexion with his home or school life. Even where a definite course is followed his earliest exercises need not be useless. Small pieces of lattice work made by each child as a class exercise may be joined together to serve as a fence around the garden of the doll's house. Exercises in boring with a bradawl and screwing in small hooks may be utilized in the home for hanging small keys and other objects.

The construction of furniture for the doll's house and the manufacture of other toys selected by the children will provide a series of simple models connected with the study of home life.

The measuring and calculating necessary for the planning out of models will teach the first principles of arithmetic in a practical way, and will form a sound foundation for more advanced work on the subject. Perhaps in this connexion a word of warning is needed. Such teaching of number during the handwork lesson should be incidental and not forced, and the model should not be chosen merely because it has great

possibilities in the direction of number teaching. A handwork specialist suggested to an inexperienced teacher that number should be taught to children of seven and eight years through the medium of the handwork. As the teacher wondered sceptically how this could be done, the innovator outlined briefly the number facts that might be learnt during certain woodwork lessons. He made his points skilfully and convincingly, and as his listener promised to adopt the suggestions, he felt the glow of self-approval that accompanies a zealous performance of duty. His self-esteem was, however, somewhat lowered when a little later he was asked by his ingenuous disciple, 'Do you think it is worth while to waste time in making up the model afterwards?'

Drawing connects naturally with the woodwork lessons, and as through its medium the child's notions of a proposed object are made clear and definite before the constructive work is begun, and by plan and design at various stages of the work the possibilities of failure are reduced to a minimum, the children learn to appreciate its practical value. Since in these days the word 'correlation' has almost become a shibboleth in some circles, it is well to realize the limitations in particular cases. Here and there such subjects as geography, history, and literature may be vitalized by the introduction of woodwork. Thus while studying the history of the Ancient Britons the erection of a rough stockade around clusters of cone-shaped huts made of willow or rush, and placed on the summit of a miniature hill in the playground or in a corner of the school, will help the children to picture out some of the conditions under which our British forefathers lived. The model of a British chariot shown in Fig. 70 is offered as a suggestion for such work. During the construction of a Swiss chalet, such characteristic features as the stone foundation by which the wooden house is raised above the deep winter snows, the steps by which the verandah is reached, the sloping and widely overhanging roof,

and the large stones sometimes placed to prevent it from being torn away by a violent storm, will give many suggestions of Alpine life. Stimulated by vivid word-pictures and telling descriptions, the children may go on to place their chalets in a setting of 'mountain scenery' and thus to form solid concrete foundations for further study.

Wood

The harder varieties of wood, such as oak, ash, and elm, cannot be used by little children, for their undeveloped muscles are not equal to the task of working in such material. Suitable wood for the so-called 'light woodwork' is obtained from the various cone-bearing trees grown in Europe and America and commonly called deal, for it combines the two essential qualities of lightness and softness.

As little children can at first only work with small pieces of wood, strips of wood measuring from $2\frac{1}{2}$ inches to half an inch in width by a quarter of an inch in thickness may be purchased for use in the first part of the course.

These prepared strips may be a great help in affording pieces of uniform size for the class exercises, but the early work should not be confined to the use of such material. It is desirable that home and school life should be connected as intimately as possible, and small rough pieces of wood such as the children can obtain at home should from the first occasionally be used at school.

Tools. The equipment for the work of small children (seven to nine years) need not be large, and tools of a very light make should be used. It will be well to introduce one tool at a time, and to allow time and opportunities for a certain amount of practice with each before a fresh one is introduced. The presentation of a number of tools before their need has been felt or their purpose clearly understood, is likely to lead

to confusion and to carelessness. The following tools have been found suitable for the youngest children:

Ruler and pencil. Sawing-block or bench-hook.
Small brass-backed saw.
Hammer and small nails (brads or panel-pins).
Empty cotton-reel for hammering-anvil.
Prickers, e.g. kindergarten-prickers or meat-skewers.
Pliers for pulling out nails.
Files for shaping or finishing the ends and edges of the wood.

Before the small tools are introduced to the children a series of drawings from real tools (such as the saw, the hammer, &c.) might be made by them as a correlative to talks, trade games, and visits to the carpenter. Respect for tools must be taught, and, before children are allowed to use them, some steps must be taken to initiate them into correct methods of doing so. The play-spirit may still be present while this is being done. Thus some of the tools might be handled for the first time during such imitation plays as would naturally follow a visit to a carpenter at work or a discussion of his trade.

The first essential to correct methods of working is a clear understanding of what one is expected to do, and how it is to be done. Therefore the children must have opportunities of watching the various processes correctly performed, and of describing what they have seen. Little by little, as they use their simple tools and thus learn by experience how to perform the process, their natural inquisitiveness should be encouraged and their power of language developed by the practice of giving in their own words the 'why' of each step.

The *Sawing-block*[1] *or Bench-hook* is so made that it may be fixed or 'hooked' firmly against the edge of the ordinary school desk to protect it from injury during the processes of sawing, boring, hammering, &c. Therefore the wood of which it is made must not be too soft (red deal). These blocks may be made at

[1] This consists of a block of wood about 12 inches square, with a strip of wood 2 inches wide across one end.

little cost by the older boys. Little children have not the knowledge or skill to draw vertical lines for cutting across the grain of the wood or to determine the various angles necessary for making diagonal cuts or 'pointing' as in Fig. 40. Vertical and oblique cuts are therefore made in the piece of wood which is screwed to the top of the sawing-block. The 'mitre' cuts and the 'pointing' seen in Fig. 40 are made by fixing the strip of wood in position in the block and sawing by placing the saw in the prepared grooves. The block is thus an adaptation of the 'mitre-box' seen in the Manual Training Room.

Boxes to hold tools may also be made of red deal by the older boys.

The *Saw*. After sawing has been watched under various conditions, e.g. a carpenter at work in his shop, another class sawing on their bench-hooks, and a demonstration by the teacher, each child should be supplied with a small brass-backed saw. Their interest in the work, with its accompanying sounds and showers of sawdust, will probably be great, and they will possibly be bubbling over with knowledge of the various forms of saw used by the carpenter, the woodman, the stone-mason, and other workmen of their acquaintance. Therefore they will welcome the new and wonderful tool with unusual delight. Every one will be eager to use it, and, as soon as may be, they should be given a few pieces of wood and allowed to do so. Before this is done, however, there should be an examination of the tool, followed by a short talk. The children will notice that the teeth are bent in two opposite directions;[1] they will be asked to find out the reason for this as they work, and they will be shown how forcing the saw or driving it into the wood will push the teeth out of place and so prevent it from cutting properly.

They will soon see that a rigid substance like wood could not be cut easily if the 'kerf' (space made by

[1] The cutting and folding of a piece of notched paper will help them to understand this.

sawing between two pieces of wood) were not wider than the blade of the cutting instrument.

Like all beginners, they will at first grip the handle tightly and expend far too much force, but by degrees they will learn to move the saw gently backwards and forwards and to cut with ease.

Hammer. The children should be shown the method of holding the hammer. During a little class drill they may learn the wrist movement by which they may describe a quadrant of a circle as the hammer rises and falls. The importance of a skilful and efficient use of the hammer to the worker in wood cannot be over-estimated.

Prickers such as were formerly used for kindergarten pricking may be useful in making holes for very small nails. *Meat-skewers* are stronger, and therefore more suitable for preparing the way before a nail is fixed into the wood.

Hammering-anvil. As the whole success of the child's work depends on whether the nails are carefully driven in, it is often better to let the child hammer the nail safely through one thickness of wood before fixing it in place in the second. This may be managed by hammering the nail over the hole in the centre of the cotton-reel.

The *Pliers* are useful for pulling out nails that have taken a wrong course.[1]

Rasps and Files. The use of these instruments provides a good means of hand training as the wood is shaped and curved.

The action of the rasp in cutting and wearing away the wood should be compared with that of the saw.

Glass-paper. This may be used in various ways. The usual method of the Manual Training Room is to cover a piece of cork by wrapping the glass-paper around it. The ends of strips of wood may perhaps be shaped better by rubbing them on the glass-paper.

[1] The tools mentioned above (p. 94) were selected by Mr. W. H. Turner, whose book, *The Wimbotsham System of Educational Woodwork*, is shortly to be published by Sir I. Pitman.

Course of Woodwork done by Young Children

The course of woodwork in the illustrations is interesting because it shows the early stages in the evolution of the work in Leyland School, Lancashire. The photographs were taken entirely from products of the first year's work. It is thought that this course may be suggestive and helpful to others beginning simple woodwork, although as the teacher was herself experimenting it was inevitable that the principle of freedom, the right of individual choice of models and of methods of construction should be applied more tentatively than they would have been had experience in teaching the subject given her greater confidence. The age of the children varied from six to eight or nine years. As, however, the great enthusiasm of Miss Thwaites and her staff, and the co-operation of the parents, have created quite special conditions, it is probable that under more normal circumstances the scheme would be found easily workable with children of from seven to ten or eleven years.

More tools than those mentioned on p. 94 have been used, e.g. a try-square to test or try the accuracy of the angles, a small smoothing-plane and larger plane, a small tenon saw, and various forms of vice.

Fine round wire was also used.

First Lessons

For first exercises the children were supplied with strips of wood, measuring 6 to 18 inches in length, 1 inch in width, and $\frac{1}{4}$ inch in thickness. Their tools consisted of sawing-block, lead pencil, and ruler for first lessons, try-square for later lessons, small tenon saw 6 inches long, small meat-skewer, nails $\frac{3}{8}$-inch, $\frac{1}{2}$-inch, $\frac{3}{4}$-inch, and glass-paper to smooth and finish off the rough sawn ends.

The first exercises consist of measuring, marking inches and half inches, sawing off lengths, dividing

them into halves longways from end to end and into squares or inch divisions; ruling diagonals for 'mitre' cuts and right-angled 'points' at one or both of the squares with which the strip terminates.

During the earliest lessons as much free work as possible was given. This might be varied by lessons, each consisting of:

(1) *Talks* about the wood, the tools, or the object proposed or completed. In some cases only the

FIG. 39. First Exercises.

material, or the tools, or the model will claim attention, at others short discussions on all three will be included.

(2) *Demonstrations* by the teacher as to the best method of measuring, marking, and sawing, followed in some cases by drill in such details as the holding of tools.

(3) *Work by the pupils* in which they try the exercises shown by the demonstrator and, as soon as possible, apply them to the making of objects. Free choice cannot always be permitted, but the teacher should always try, within the limits of the exercise, to let children

make what they prefer. A stock of models should be available at each stage, which the children can draw and make up. Except in class work the individual character of the work should be sustained by giving each child a different model.

Some of the first exercises in cutting off definite lengths, in dividing inch-wide laths into sections in half from end to end, and in making diagonal cuts, are shown in the first row of Fig. 39.

The first practice in hammering was that of nailing together two laths of equal length and thickness, laid together so that the grain of each went the same way.

Before using hammer and nails the children observed the 'grain' of the wood in the strips and in a large piece of wood which was shown to belong to the trunk of a tree. They made letters by laying the laths on each other and were soon ready to make a model. After repeating the exercises shown, such models as the flowerpot-stand and the letter E were among the first.

After building up models two laths deep, a third lath was added, and by this means mortised joints were built up. The joints fit into each other and thus hold together without being nailed, e.g. the T and H of bottom row.

This work was followed by the making of toys such as the tiny truck, by arranging and nailing on each other a series of flat laths.

Building up toy models whose surface shows length and breadth only

The next step consists of nailing a number of flat laths on others running at right angles to them. Flat representations of a variety of houses, churches, and castles were made. The toy castle shown is an example of such work. The children's love of representing real

things may be satisfied by drawing on the laths with a brush or with pen and ink to indicate doors, windows, &c.

This making of objects in which the laths are nailed close to each other was succeeded by others in which spaces are left between each vertical lath as in the railings in Fig. 40.

The illustration shows an example of class work when each child made a similar one from a model

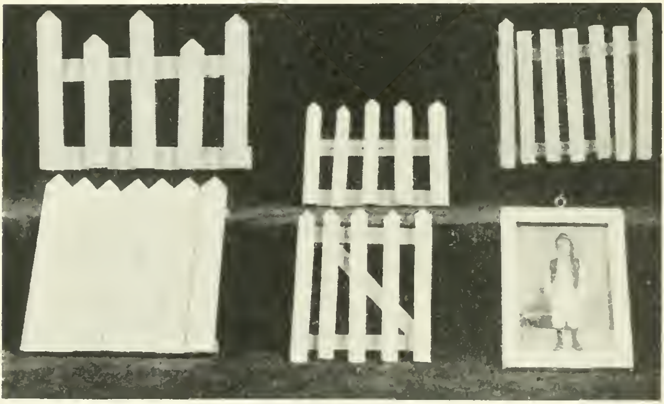

FIG. 40. Models whose surface shows length and breadth only.

and the directions of the teacher; 2 was an original model of a piece of garden railing; 3 and 4 were drawn and made from drawing and model; 5 was made from a model which the teacher had constructed.

Picture-frame. This is an example of class work. The teacher had previously constructed a model which she showed to the class. The pupils gave suggestions as to method of construction. They measured the model to find out its size and the amount of wood required. A demonstration lesson was given to show mitre cuts, nailing, and fixing the picture in the frame.

The pupils had brought their own pictures. After the demonstration they were able to proceed with the making of the model without further help.

Exercises in nailing ends and edges

(1) *With flat laths* only, making toy sign-posts, signals, such letters as L, F, E, H, T, looms for weaving, and many simple toys. The children can arrange the laths in as many ways as possible, and suggest toys to be made.

(2) *With flat laths and wider pieces of wood.* The making of a box without a bottom, such as a section used in wooden beehives, would be followed by supplying the children with pieces of wood wide enough to add the bottom and thus complete the box. This wood may be bought, or it may be obtained from chalk-boxes and similar sources.

Work with Square Rods

Such work may be succeeded by the introduction of the square rod when many of the flat models can be repeated in the new material and afterwards combined to make simple skeleton cubical models.

Simple Furniture for Doll's House

This was made by six-year-old children.

Chairs. The sizes of the wood in the two larger chairs were obtained from drawings.

Finished models were given to the children as guides in nailing the pieces together.

The *tiny chair* was made from an original model constructed by another pupil.

The *arm-chair* was made entirely by the child. The method of construction was evolved mainly by him, although the teacher gave a suggestion here and there.

The *tiny stool* was made by a child from his own ideas without any help or suggestion as to model or method.

The *table* was made from a model in the woodwork scheme.

The model and method for construction of the *sofa* was suggested by the teacher, but the work was carried out entirely by the pupil.

FIG. 41. Simple Furniture for Doll's House.

Objects made from a Box

The illustration (Fig. 42) shows class and original work done by young children.

The making of the box was a class exercise. Each child made his own model under the direct supervision of the teacher and in response to her suggestions and to those of other children. In later lessons individual ideas and construction appeared in the adaptation and modification of this box to various purposes. Thus the making of the table seen in Fig. 41 was suggested and carried out entirely by the pupil by the addition of four square rods for legs.

Wheels. Since most young children, like Toddie in *Helen's Babies*, 'want to shee the wheels go wound', as soon as toy-making begins there is a demand for wheels to complete the 'push-carts', 'prams', &c., which the little ones spontaneously select.

All the wheels added to the little vehicles in Fig. 42 were obtained by sawing from a round rod of wood of about an inch in diameter. They are sawn across

instead of with the grain, hence they split easily and are only partially satisfactory, but this method of cutting wheels seems to be the best that can be devised at this stage, when so few tools can be used. Indeed the making of strong and serviceable wheels presents a problem difficult enough to tax the resources of the children in the Manual Training Centre.

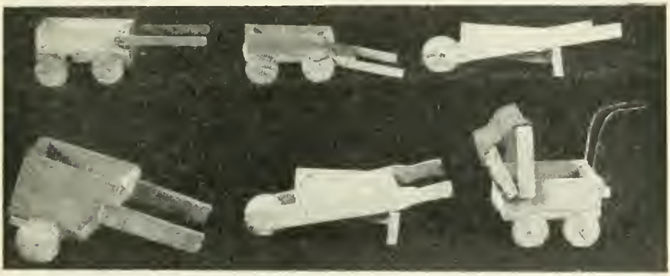

FIG. 42. Objects made from a Box.

Other materials needed. The children were supplied on demand with the narrow strips of wood, and with any other simple material they needed to finish their toys, such as wire for the handles of the perambulator and spotted print for making the awning.

The little cart (top row, 1) was made by nailing to the box two strips for attaching wheels and two strips for shafts. The shafts were rounded by rubbing with a file and with glass-paper.

For the second little cart (a lorry) (top row, 2) the little maker asked for an extra piece of wood, to which he attached the shafts, leaving small pieces projecting by which he could nail them to the cart. This was the child's own idea.

The first little wheelbarrow was an original idea, and was conceived and carried out entirely by the child. The wheel is attached by means of a piece of stout wire.

The maker of the second wheelbarrow improved on

the original idea by rubbing down the handles with his file.

The cart (second row, 2) was entirely original, and, as may be seen, it was made from a stouter and wider strip of wood.

The babies' perambulator was a suggestion from the teacher both as to the model and method of construction.

The examples shown in Fig. 43 were the handiwork of the more expert pupils.

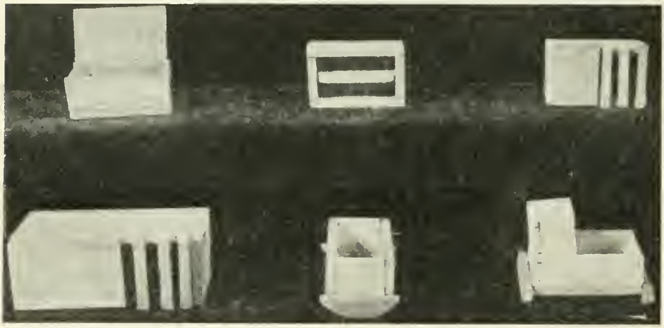

Fig. 43. Objects made from a Box.

In each case the box made was a class exercise, and the idea of its adaptation to other purposes was in some cases that of the pupil, in others the suggestion of the teacher. Thus:

(1) *Box with lid.* The child suggested the idea of fixing the lid. The teacher fell in with the idea and supplied him with a piece of stout tape to serve as hinge, and with some glue to stick it to the box and lid.

(2) *Knife-box.* The teacher suggested the idea and the child cut a piece of wood the requisite size, sawed off the edges and rounded them with glass-paper.

(3 and 4) *Hutch.* Here again the teacher suggested and the child worked out her idea.

(5 and 6) *Cradles.* The idea of affixing rockers to the box was suggested to the pupil, who prepared them by sawing off corners and rounding with glass-paper. The hood of the second cradle was the child's own idea.

Fig. 44. Furniture.

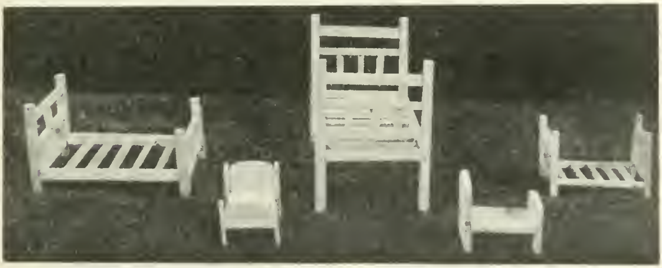

Fig. 45. Bedsteads.

The *furniture* seen in Fig. 44 consists of three chairs, a sideboard, and a washstand.

The chairs were class work, and were made from square rods, with the addition of a seat as in No. 5 rods and laths half an inch wide with piece of wood for seat as in No. 4.

The sideboard and the washstand were copied from toy models.

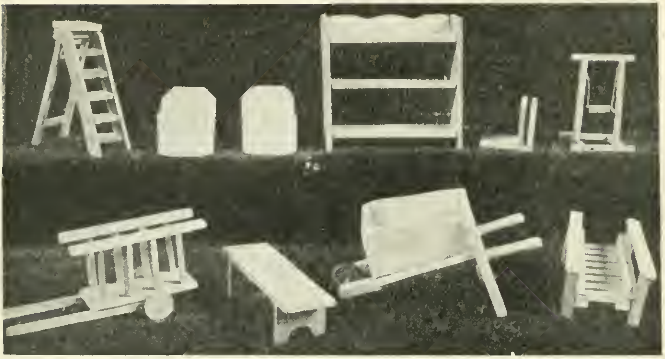

FIG. 46.

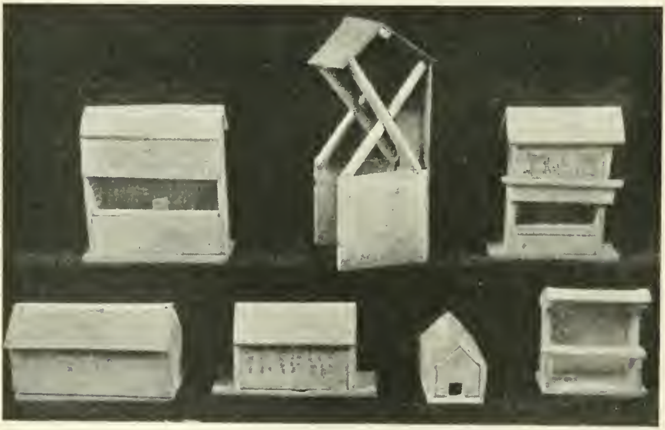

FIG. 47

The makers made drawings of the toys and also of the pieces of wood required, marking the dimensions of each. Then they constructed their respective models.

The door of the cupboard in the lower part of the

sideboard was glued on by means of tape, and was finished by adding a tiny knob made of a little brass nail.

The three larger *bedsteads* seen in Fig. 45 are examples of objects made with square rods. The smaller

Fig. 48. Bedsteads.

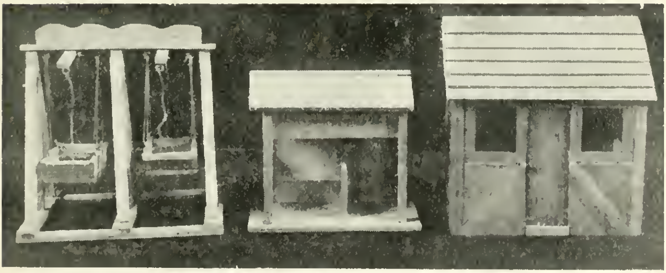

Fig. 49. Front View of a Swing, a Shop, and a Hut.

ones are made from pieces of American whitewood which had been planed and prepared by the pupils. One of the small bedsteads has posts made from square rods.

The tiny swing in Fig. 46 is an easy model also made from square rods, and was a class exercise.

The steps were made from rods and narrow laths.

The stand was attached to the steps by gluing on a piece of tape.

Nos. 2 and 3 are letter-racks.

No. 5 is a tiny vice, and was a child's own idea.

No. 7 is a primitive kind of wagon, and was made by the child after he had seen a similar one in his district.

FIG. 50. Side View of a Swing, a Shop, and a Hut.

FIG. 51. Woodwork and Raffia.

The wheelbarrow is an original model, and was made by the pupil after a more simple one had been tried. The child in this model showed a great advance on the first one that he made.

Base of first model was 2 × 3 inches.

The sloping sides were 3 inches in the longest part and $1\frac{1}{2}$ inches in the narrowest part.

The stool shows the use to which some of the first exercises with the brace and bit were put.

The toys shown in Fig. 47 include (1) two models of a butcher's shop made from different toys; (2) models of Noah's arks also copied from toys; (3) a dog-kennel, and (4) a stall. The roof of the latter is made of linen; (5) (top row, centre) an example of a child's homework with the rough materials he can command. It is a model of a summer-house which the child had seen in the vicar's garden.

Fig. 48 shows examples of three bedsteads; 1 and 3 were made at school, but 2 was made at home.

Figs. 49 and 50 show, respectively, front and side views of a swing, a shop, and a hut.

Development of the Work in Later Years

During the following year much freer work was allowed, much less demonstration given, and each individual child had fuller scope to work out his own ideas.

The work is at present in its third year, and as far as possible entire freedom is allowed. Many of the exercises shown above are unnecessary, because the children are taught to plan, to measure, and to mark during a preliminary course of paper modelling. From time to time the services of the more accomplished little craftsmen are enlisted on behalf of beginners and weaker members. By the aid of such little tutors the novices are initiated into the work. The children, working together, take it in turn to choose the models, but the selection is often subject to the veto of the older child. After acting as understudies for a few lessons, the beginners work alone for a short period of free experimental work. The teacher noticed a marked difference in the choice of the six-year-old and eight-year-old children. As a rule the latter selected very simple models, well within, if not below, their powers. Those chosen by the novices, on the other hand, were much more difficult. It was evident that the more

experienced children thought of the details of construction, and were anxious to finish neatly and accurately. The younger ones, on the other hand, were unable to gauge the difficulties, and merely thought of what they would like to make.

Soon the number of difficulties encountered, and the curious and ineffective attempts to remedy faulty work, showed that the children had reached a point where it was necessary to give more definite help than that given by their fellow pupils and by the occasional individual guidance of the teacher. The latter had, therefore, to face the problem as to how such help should be given. Nothing must be told that could be found out. The children must be *led to see* where they were wrong and why greater care and accuracy were needed to produce satisfactory work. It was found that sometimes, especially in the early stages, this guidance could be given most effectively by the teacher, together with the children, choosing and making a model, bringing in the necessary foundation work—sometimes by letting them try to make a model without help, and following this exercise by another in which the necessary measurements and directions were given. A comparison of the results obtained by the child's unaided efforts with those of a model made correctly from given measurements led the pupil to see wherein the fault lay.

Like us all, the child learns as much or more from his failures as from his successes, and the teacher should not step in until he is really needing help. On the other hand, she must not wait until he is disheartened and discouraged. The products of this later work were naturally less finished and accurate than those shown above, from the point of view of results, but it is believed that this freer work will result in deeper and more permanent mind growth.

Books of Reference

Articles in *Educational Handwork*, by J. H. Judd.
Learn by Doing, by J. H. Judd.

CHAPTER VII

PAPER CUTTING

Paper cutting is an occupation which can profitably be introduced into every scheme of handwork for young children. It leads naturally from the paper tearing of the babies, through the shaping of clothing for dolls or Teddy bears, to the cutting-out of garments for children and adults. It is the complement of outline drawing and clay modelling, since it represents the silhouette or representation of the object in mass or surface. Like paper tearing, folding, and modelling it is adapted for a home occupation for busy little fingers. It provides an excellent means of helping the children to get a correct knowledge of form.

Materials

Since it is sometimes easier to do this when the child's attention is not distracted by the introduction of colour, the special paper provided for cutting and mounting is usually black or white, mounted on a white or black field. For ordinary work, however, any paper of moderate firmness may be used. The children may practise with the paper that has been already used during drawing and writing lessons. Ordinary surface-paper and rather thin drawing-paper answer the purpose quite well.

Scissors with blunt points should be provided. Care is needed to keep them in good working order, and they should occasionally be oiled. As the children progress towards the cutting-out of difficult objects, it may be well to have a few pairs of scissors with fine points, which may be lent to the most expert workers.

'Graded Exercises'

In this, as in other occupations, it is necessary to plan out a simple, carefully graded course. Working through a course which is well within their powers will help the children to gain confidence in themselves and to do their best work. When, however, the teacher is a slave to the course and omits to use the occupation in other ways as occasion offers, it becomes a hindrance instead of a help.

Sometimes paper cutting may serve to help the child to obtain new ideas about matters discussed in other lessons, sometimes to amplify ideas already gained, and sometimes to reproduce from memory or from imagination impressions gained in various ways.

The early exercises should consist of free cutting on single paper. Later exercises may occasionally be traced or drawn, but these are less valuable as a means of eye-training than the free cutting. The cutting out from paper doubled in various ways gives many effective designs and leads on naturally to stencilling.

Free Cutting

After some practice in the use of the scissors has been given, and the children have learnt how to move the paper to meet them as they cut, a beginning should be made by cutting out in single paper very simple objects such as a ball, an orange, or a pear.

A talk on a fruit or a vegetable may profitably be followed by an attempt to cut out the form in paper. Thus a useful and effective exercise which would fit into any simple scheme was done by a class of six-year-old children.[1] The talk had been on the potato. From his individual specimen each child cut out a potato in paper while the teacher drew the potato plant on a sheet of brown paper. Then the children coloured their 'potatoes' by the use of crayons, and lastly those who had cut out the best potatoes were allowed to

[1] Miss Nelly Ingle, Summertown, Oxford.

go out and stick them on to the roots of the potato plant drawn by the teacher.

Simple toys may well enter into the scheme, and at Christmas-time a large Christmas-tree may be

Fig. 52. Roman Ship.

drawn by the teacher, and the children may be allowed to 'dress' it by sticking on the most worthy of the products of their paper cutting from toys.

While studying life in Holland and the chief characteristics of Dutch scenery, an enthusiastic teacher[1]

[1] Miss Tennant, of Luton.

delighted her little pupils by allowing them to cut out in their drawing-paper tulip plants and flowers in various stages of development. On the base of each cut-out specimen was left a tiny oblong of paper which when folded back enabled the flower to stand in the tulip field formed in a large sand-tray. A distant view of this field was very realistic to the children.

Fig. 53. Saxon Ship.

Many co-operative efforts of the kind will be found useful in work for young children. Thus 'Noah's ark' and its contents provides a series of models suitable for individual work in which many may join towards a common end.

The illustration of stories may be effected by allowing groups of children to undertake certain parts of the story. These may be unified by being arranged in groups and pasted on a sheet. A pretty dado for a class may be made by pasting flowers, birds, or butter-

flies, cut out by the children, on strips of moderately stout paper and fixing it around the class. The preparation of such a dado will teach the principle of repetition and so prepare the way for designing.

While studying strange peoples, such as the Eskimos, the children may be helped to get correct impressions about such creatures as the whale, the walrus, the seal,

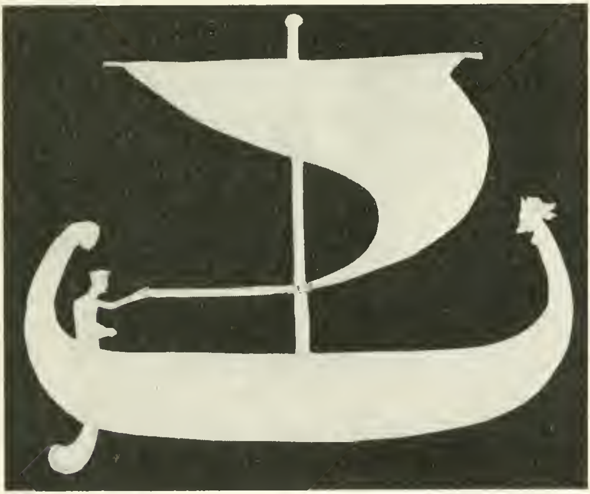

FIG. 54. Norman Ship.

the bear, and the Eskimo dog by observing pictures of them and trying to cut them out in paper.

While stories of the Cave Men are being told, some of the gigantic contemporary prehistoric animals may be cut out and compared with those to be seen at the present day.

Sometimes, when the subject is too difficult for the children to attack in free cutting, silhouettes of cardboard may be given, around which the children may trace, cut, and thus obtain some idea of the object.

A very effective aid to the teaching of history may be given by having a dado around the room on which may be pasted weapons, boats, chariots, armour, and other objects illustrating the period under discussion. Some of the boats shown in this chapter were taken from such a class illustration.

In one school[1] where this was done a line of time on which each period (prehistoric, early British, Saxon, Danish, Norman, Plantagenet, &c.) was marked ran side by side with the illustration. The children occupied their spare time in the study of available books and pictures of the various periods and in vying with each other to produce suitable contributions to their 'gallery'. The result was very striking and educative to the children. To this result the habit of acting spontaneously any scenes which seemed to lend themselves to such treatment, and the discussion of costume and armour which took place during a preparation for a more ambitious acting of historical scenes at a school 'At Home', contributed largely.

[1] Central Girls' School, Oxford (Miss Chadwick).

CHAPTER VIII

DRAWING

Drawing should play a valuable part in the child's education. It leads to more exact and careful observation; it provides the child with a means of expressing what can often be expressed in no other way, and it helps him to synthesize scattered impressions, and to deepen and clarify vague perceptions.

The child needs many forms of activities to enable him to 'lay hold upon the world that surrounds him', and to help him to realize the ideas which float through his mind. Drawing is one of the most important of these, and it offers a valuable means of reinforcing the constructive activities. Thus when the children construct models such as those of the various dwellings or means of transport characteristic of other times or places, the knowledge gained incidentally from picture and description may occasionally be utilized in making simple sketches of typical scenes illustrative of the age or the region to which a particular model belongs.

The habit of making sketches of simple models of such handwork as an Indian wigwam, the summer or winter dwelling of the Eskimo, a Lapp, an Arab, or a Kirghese tent, a pygmy hut, a Greek chariot, a Roman galleon, a dragon-ship, a two-winged Nile-boat, or a sledge, and of working up the knowledge necessary for the crudest attempt to give them some characteristic touches of their natural setting, will tend to stimulate the spirit of research and to encourage the independent effort without which no real education can take place.

Such work will vary greatly with the powers of the little artists. Starting from unintelligible scribble it often develops into spirited pictures of such scenes as the landing of the Romans, or of the 'hardy Norsemen',

of the storming of a castle, of the coastal life of the Eskimos, or of tobogganing in Canada.

Drawing from memory trains the child to recall memory images, to discover discrepancies, and to create a desire to make good such discrepancies as occasion arises. It should have a large place in any scheme. Work on wall boards, from a model placed in a prominent position in the room, often resolves itself into an exercise in drawing from memory, since after the first observation the young child seldom turns round to look at the model until he has completed his drawing. Regular exercises in drawing from memory should be given, and should include the sketching of simple objects in daily life before they are attempted from a model, as well as those which have been drawn in a previous lesson. Sometimes the work will consist of a series of attempts during which the model is alternately exposed and hidden from view, and sometimes opportunity for out-of-school preparation may be given by announcing the subject the day before. Steady practice in drawing from memory objects simple enough to stimulate the child to do his best work will prove an excellent means of teaching him to 'see' and of developing and revealing to him his own powers of graphic representation. Little by little, as he gains confidence in himself, his drawings will show increased boldness and spirit.

What Children should Draw

Most people are now agreed that children should draw things in which they are strongly interested. Therefore, before we can decide what a child should be asked to draw at any particular period, we must know what he loves to watch and what he does spontaneously. This we can all discover by observing children under varied conditions, in the home, the street, the field, and the playground, as well as in the school. Thus we may touch the borderland of the child's world.

Most children love toys, and above all toys that move; therefore we let them draw toy motor-cars, engines,

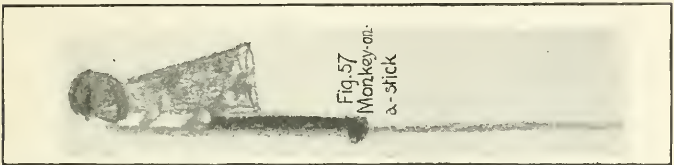

Fig. 57 Monkey-on-a-stick

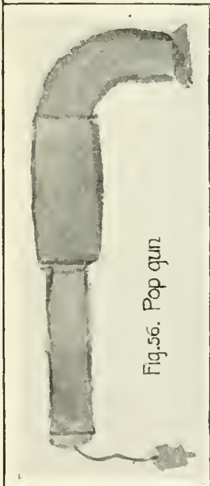

Fig. 56. Pop gun

Fig. 58. The Blacksmith

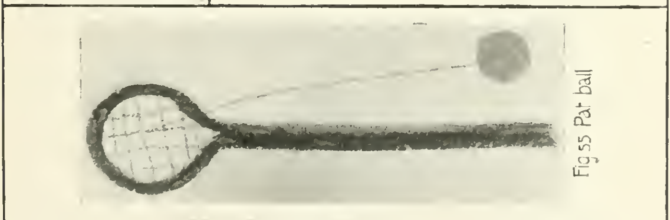

Fig 55 Pat ball

roundabouts, horses and carts, windmills, weather-vanes, and such fascinating objects as Jump Jim Crow, fool's baubles, and monkeys on sticks. For the earliest

efforts very simple objects must be chosen. Such toys as a ball, free or attached to a string, a cup and ball, a small racket with a 'pat-ball', a top, a whip, a kite, a battledore and shuttlecock, and a skipping-rope make good subjects for first lessons.

In a past which is not very remote, the drawing of a class of young children has in some cases been limited almost entirely to that of plant forms. A study of children's spontaneous drawings teaches us that in early stages the child, like the savage, prefers to draw animal and human forms, while the drawing of plant forms indicates a later stage of development. Flowers, leaves, and fruits form excellent studies for occasional sketches, but they should not be presented so frequently as to exclude other subjects.

Even in town schools animals are often kept as pets or introduced for short periods. Such creatures as canaries, doves, hens, ducks, tame mice and rats, frogs and tadpoles, fishes, and rabbits may be drawn from 'life' in the schoolroom. In the country the subjects offered for choice from the animal kingdom are more numerous. Of course finished drawings of animals cannot be expected, but the children should be encouraged to draw as freely as they talk, both in and out of school, and to bring to school the results of their home efforts. They seem to be united to the young animals with a special link of sympathy, and they will gladly draw the proud duck sailing at the head of her ducklings, or the clucking hen followed by her brood of downy chicks, while the more skilled make praiseworthy attempts to represent the tiny colt as it stands near its mother, or the woolly lamb frisking in the green fields.

The child loves action, and his picture of a flower drawn from a specimen may be infused with life by the addition of the bee or the butterfly sipping honey as it passes, while to the sketch of a river-scene a painting of the dazzling dragon-fly may form a pleasing finish.

Fig.59. Ring game

Fig.61. Draw a bucket of water

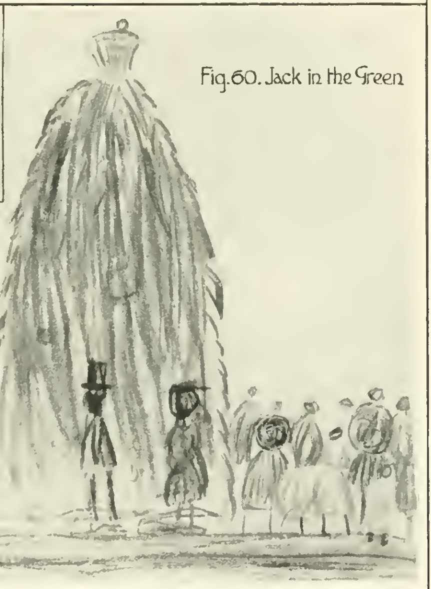

Fig.60. Jack in the Green

Fig.62. Oranges and lemons

The children's love of representing men, women, and children by crude methods, once so sternly discouraged, should also be stimulated and developed. Thus one child may 'pose' as model for a few minutes, after which the children make their rough sketches.

Children are always interested in the work done by their elders; hence tools and domestic utensils are often suitable objects for children to draw, but the choice should depend on what they have seen in use. Thus the child who has watched his father digging in the garden, planting and watering seeds, and who has imitated the process in his own way, will be in a position to make a good drawing of spades, garden forks, pails, watering-pots, wheelbarrows, &c.

Fig. 63. Catching the Parachute.

At hay-making or harvest-time children who have observed the process from beginning to end will be able to make more or less faithful drawings of the scythes, sickles, forks, and other tools, the haycocks and stacks of corn, the loads of hay or corn, the hay- or corn-rick and ladder, either directly from the object or from memory.

After the details of any agricultural scene, such as ploughing, hay-making, harvesting, or gardening, have been drawn, one child might pose to represent one of the workers, and lastly the scene might be completed by a few characteristic touches, e.g. haycocks, if a hay-maker is being represented, a garden as a background for a gardener, &c.

The habit of sketching portions of the familiar hills,

lakes, rivers, and plains of the Homeland will be the best possible preparation for the cultivation of the power of visualizing land-forms in other regions, when such memory pictures form the basis of new scenes built up in imagination from pictures and vivid descriptions. Thus geography may become a live subject closely connected with everyday life.

Impressions must be vivid

If the child's drawing of an object or a scene is to be as full and complete as he is capable of making it,

Fig. 64. An Aeroplane.

it is important that his impressions should be vivid. Therefore in order that his attention may be completely focused on a subject, it is not only necessary that he shall be quite familiar with it, but that he shall recently have had opportunities of getting impressions from other senses than that of sight. These conditions are admirably fulfilled when the child is asked to draw a model which he has lately constructed.

Before the children begin to draw a toy, some members of the class should be allowed to play with it; before they try to draw a pose suggesting action, such

as skipping, sawing, or spinning, some of them should be asked to perform the action they are to portray. Often a choice of positions must be made, and when this is the case the children should be allowed a voice in the decision. Such a toy as a monkey on a stick may be drawn in a number of positions, and where several toys are available, children may be allowed an individual choice. After the earliest stages, objects should be arranged in groups suggestive of their use.

Fig. 65. The Boat Race.

Thus a spade and pail would be a suitable group for a child who has just returned from sand-digging and castle-building at the seaside.

Children who have just played in the hay or taken a vital part in the life they are asked to depict, are likely to make much more spirited drawings than can be made by those who merely see the work from the outside. It has been said that the contributions made by the other senses—such as the smell of flowers, the taste of fruits, the sounds natural and artificial that may be heard, and, above all, the knowledge of form gained by handling objects—are valuable in helping a child to enter more fully and completely into the

heart of a scene, and hence to a more vivid representation of it.

We have already spoken of the part which drawing should play as a means of acquiring knowledge. Incidentally the artistic instincts will be cultivated, but our main aim is that of helping the child to understand the world around him.

'The child who tries to draw what he sees is training his power of observation, not less than his power of

FIG. 66. The Joy Wheel.

expression. As he passes and repasses between the object of his perception and his representation of it, there is a continuous gain both to his vision and to his technique. The more faithfully he tries to render his impression of the object, the more does that impression gain in truth and strength; and in proportion as the impression becomes truer and stronger, so does the rendering of it become more masterly and more correct.'[1]

When we understand the function of drawing in the education of the child we realize that the highly

[1] *What Is and What Might Be*, by E. G. A. Holmes, pp. 84–5.

finished product which is not the result of the child's own perception, but a mere copying of a preliminary sketch made by the teacher, or an application of a prescribed formula, is worse than valueless, because while the child thinks he is learning to draw he is really gradually losing the power of observation.

'And with the wasting of the power of observation, the executive power is gradually lost; for perception is ever interpenetrating, reinforcing and stimulating expression; and where the eye is blind, the hand, however skilful its mere manipulation may be, necessarily falters and loses its cunning.'[1]

The teacher should be the sympathetic friend or elder sister, to guide, to stimulate, to encourage, or to console.

It has been said by good authorities that the pupils of a teacher who cannot draw become more expert than do those of the injudicious teacher who is too ready to draw for her class.[2] This may be true, and it is a fact which contains much comfort for the teacher who is not gifted in this direction. Probably, however, the zeal of a particular teacher may more than compensate for her lack of skill in the art of drawing. On the other hand, an occasional opportunity to watch an artist at work will give a valuable impetus to the child's work.

Only too often the average teacher has so little power of drawing that she reduces the representations of her objects to mere symbols. Moreover, the same symbol always represents the same kind of object, however different the conditions may be. Thus one type of castle on one type of hill always illustrates the castle of a story whether the story be mythical or real. A tree is always composed of a brown trunk with a globular appendage to represent branches. A side view of a boat with one sail does duty for a lifeboat, a fishing-boat, &c.

When the teacher draws for illustrative purposes, the

[1] *What Is and What Might Be*, pp. 84–5. [2] Ibid. pp. 178–80.

objects represented should be shown in a variety of positions. The children should not be given a drawing of an object or a scene before they are asked to sketch it, because it is probable that the drawing will be so photographed on the mind as to hinder the child from making a faithful copy of the object as he sees it.

In a *School in Utopia* Egeria thus describes her method of giving a drawing lesson.[1] 'I gave each child an ivy leaf and said, "Now look well at it."

Fig. 67. A Milk Cart.

We talked about its peculiarities, looking at it all the time, and then I told them to draw one, still looking back to the leaf from time to time. Then I examined their drawings. A good many were, of course, faulty. In those cases I did not say, "No, you are wrong; this is the way," and go to the blackboard. I said, "In such and such a part is yours the same as the leaf? What is different? How can you alter it?" &c. I made *them tell me* their faults. There was no blackboard demonstration.'

[1] *What Is and What Might Be*, p. 179.

Materials

The child's well-known love of scribbling on the one hand, and on the other his undeveloped muscles and the obvious harmfulness of keeping him too long in one position, suggest that he should be supplied with a medium which may be obedient to his lightest touch, and by means of which broad effects may be obtained through free arm movements while working on a large surface.

A supply of the common blackboard chalk, and as much vertical surface as can be afforded on the walls of the classroom, or an apparatus provided for the purpose, seems to be the best way of meeting the child's need. The drawing on a large scale which is thus encouraged demands a certain amount of movement, and provides a welcome change from the seat work on which so much of his school time is apt to be spent.

Large drawings are also frequently made with chalk on sheets of brown paper, placed on the desks or tables, or pinned to the wall.

Crayons. There are many forms of crayon and pastel which may be obtained more or less cheaply, and which provide the colours so necessary for satisfying the young child's craving for bright things. While they are not so well calculated to encourage bold free drawing as are the coarser kinds of chalk, they are valuable for many kinds of work. Unfortunately, however, one often has to choose between a pastel which is so soft and friable that the drawings rub off very easily, and a crayon which is inclined to be hard and greasy.

Unless the crayons or pastels are good enough to make faithful colour-matching possible their use should as soon as possible give place to that of water colour. For the limited range of colours usually available tends to accustom the children to be satisfied with an approximate result, and hence to encourage insincerity of expression.

They offer, however, a facile medium for the children's

first experiments in colour-blending, and some very satisfactory effects may be obtained by lightly rubbing one colour on to another, or by rubbing them on in parallel lines.

Water colour. Much of the work done by children consists of so-called 'brush work'. This is usually done in monochrome or in colour mixed by the teacher ready for the children's use. For example, a flower such as a dog-rose is obtained for each member of a class. When colours are used each child is usually provided with paint in three colours—green (for leaves and stalks), pink (for flower), and yellow (for stamens). When this method is followed for some time, the child is forced to shut his eyes to all the subtle gradations of shade and of tint; indeed, after a few years' practice with prepared colour, he becomes blind to their very presence. This may be seen when the mixing of their own colours is deferred until the children reach the age of twelve, or when they are promoted to the upper classes of an elementary school. They have so long been accustomed to paint in one flat and level tint, and to disregard all the beautiful effects to be seen in nature's colouring, that the belated introduction of a box of paints for their individual use finds them (for a time at least) quite unable to avail themselves of the opportunities it offers them. The only remedy seems to be to allow the children from the first to use their own colour boxes. Of course their first efforts will consist of mere daubs, but the exercise of patience and sympathy will be rewarded by the child's progress in the power to see, to enjoy, and to reproduce something of the gorgeous colour feast spread by nature.

The *lead pencil* is a valuable medium whether it is used alone or for sketching in outlines of objects or parts of scenes to be painted in colour. When used for sketching or shading too hard a pencil should not be selected. A variety of pencils will be found useful for various purposes. Thus a H.B. pencil may be

used for the outlines and the lighter shade, and a B. or a B.B. for the darker shadows.

Charcoal and *white crayon* may sometimes be employed for emphasizing the lights and shades.

Work in Water Colour

The brush may be used in a variety of ways on a surface which may be dry, partly dry, or wet.

1. *On a dry surface.*

(*a*) Drawing letters or small objects like a hairpin or a glass-headed pin with the *point of the brush* on plain paper.

(*b*) *Mass drawing.* The whole or any part of the brush will be used as occasion requires.

(*c*) *Painting washes.*

2. *On a wet surface.* The surface is painted with water and the colours are dropped in and allowed to blend on the paper. This method produces fresher and more beautiful colours than can be obtained by mixing on the palette.

Among the water colour drawings which may be made by young children are plant and animal forms, objects of various sizes and shapes, landscape scenes, illustrations of lessons, &c.

Colour. Some work should be done in each of the primary colours before the children proceed to mix them for the production of the secondaries. For the very first lessons, while the child's whole attention is absorbed in the mere laying on of colour, such artificial objects as the Gift I balls are suitable, and perhaps preferable to natural objects; but painting from nature is the best means of training a child to appreciate beauty of colour. The painting of such natural objects as a cherry, a tomato, a lemon, an orange, and a leaf, may be alternated by that of artistic artificial objects, such as a bow of ribbon, a simple piece of pottery. Inartistic articles should never be chosen.

During water colour drawing, children will to a great

extent 'evolve their own technique', but occasional exercise in the use of the point of the brush, in making lines of varying thickness, in the use of the brush in building up masses, or in moving it from left to right, as in laying on washes, will be found helpful.

It is perhaps more difficult to use the point of the brush than to paint an object in mass or to paint a simple wash; while some teachers will choose to begin by painting simple objects, others will prefer to start their pupils making washes to represent such scenes as a blue sky, a green field, or a stretch of yellow sand.

Demonstration Lesson (children aged seven years)

A Cloudy Sky

On a fine day when the sky was full of large fleecy clouds, the children went into the playground to observe the clouds and the blue sky. They then returned to their classroom, where the following apparatus was ready:

Small paint boxes, containing three primary colours. Camel hair brush (No. 6). Small bottles of water and pieces of clean rag (brought by each child for his own use).

Brush drill. The children were shown how to move their brushes from left to right.

(*a*) In the air.

(*b*) On books.

They dipped their brushes in their small jars or bottles of water and painted on their papers in water.

The teacher next painted on her large piece of paper which was pinned to the blackboard, and showed the children how to take a little blue from their palettes and to drop it into the wet surface of their paper by passing the brush lightly across.

When the children had finished this, a little discussion of the cloudy sky took place to recall to their

minds the cloud-pictures they had seen. They were next shown how to take a little piece of cloth and wipe out the clouds into any shapes they remembered.

The chief faults were a tendency to take a great deal too much paint, to disturb the surface and spoil the effect by too much brush movement and pressure.

The teacher thus learnt that she must try and show the children the need for using the brush lightly and gently during the next lesson period.

Books of Reference

What Is and What Might Be, by E. G. A. Holmes.
School and Home Life, by T. G. Rooper.

CHAPTER IX

REPRODUCTION OF PRIMITIVE INDUSTRIES

The artificial conditions of modern life, the introduction of the factory system, and of the elaborate machinery of this age of science, have surrounded the growing child with processes so complex as to be beyond his power of understanding. This is discouraging to him, since the healthy restless spirit of inquiry, so necessary to his development, tends to give place to a non-critical acceptance of things as he finds them, and, moreover, the deadening and stifling of his natural curiosity tends to retard, if not to arrest, his mental growth.

Not many generations ago (as in retarded civilizations to-day), all the simple industries connected with the production and preparation of food and clothing were performed within the limits of a single household, or were centred in the village or immediate neighbourhood. In those more primitive times the children were early initiated into the mysteries of such typical forms of industry, for facilities existed for the observation of the work at all its stages, and they were expected to help in certain branches, and thus to share in the work.

'We cannot', says Dr. Dewey, 'overlook the factors of discipline and of character-building involved in this; training in habits of order and of industry, and in the idea of responsibility, of obligation to do something, to produce something in the world. There was always something which really needed to be done, and a real necessity that each member of the household should do his part faithfully and in co-operation with others.

Personalities which became effective in action were bred and tested in the medium of action. Again, we cannot overlook the importance for educational purposes of the close and intimate acquaintance got with nature at first hand, with real things and materials, with the actual processes of their manipulation, and the knowledge of their social necessities and uses. In all this there was continual training of observation, of ingenuity, constructive imagination, of logical thought, and of the sense of reality acquired through first-hand contact with actualities. The educative forces of the domestic spinning and weaving, of the saw-mill, the grist-mill, the cooper shop, and the blacksmith forge, were continually operative.

'No number of object-lessons, got up *as* object-lessons for the sake of giving information, can afford even the shadow of a substitute for acquaintance with the plants and animals of the farm or garden acquired through actual living among them and caring for them. No training of sense-organs in school, introduced for the sake of training, can hope to compete with the alertness and fullness of sense-life that comes through daily intimacy and interest in familiar occupations. Verbal memory can be trained in committing tasks, a certain discipline of the reasoning powers can be acquired through lessons in science and mathematics; but, after all, this is somewhat remote and shadowy compared with the training of attention and of judgement that is acquired in having to do things with a real motive behind and a real outcome ahead.'

Dr. Dewey felt that the culture value of typical industries might be so great that he introduced them into his school as 'active centres of scientific insight into natural materials and processes, points of departure whence children shall be led out into a realization of the historic development of man'.

The experiments made by Dr. Dewey at Chicago and by Professor Findlay at Manchester have been full of significance to all educationists. They have

taught us how to supply the child with a motive by choosing work which is really congenial to him—work in which the end is not too remote; how to call forth his powers of invention by approaching the work experimentally; how to introduce science and art in a practical way; and how to prepare the child to be an active and intelligent member of a community.

It is good that we should from time to time try to regard our work from a fresh standpoint. By keeping the mind in action we retard the petrifying process that will set in when we allow ourselves to settle into a rut by repeating, automaton-like, one kind of exercise in one particular way.

While we can be faithful to certain never-changing principles, we may constantly vary the details of our method. This will help us to preserve the mental elasticity necessary to adapt ourselves to ever-changing conditions. As Lowell says:

> New occasions teach new duties,
> Time makes ancient good uncouth,
> They must upward drive and onward
> Who would keep abreast of truth.

It is true that but few of us possess the facilities to carry out such an experiment as that made at Chicago by Dr. Dewey and his staff, but a study of such work will reveal to us many illuminating ideas which we may apply to our own.

The children's efforts to project themselves into times when many of the comforts and appliances we associate with our everyday life were lacking, to picture man under conditions so different from our own, to trace his development from savagery upwards, and thus in imagination live through the same stages, offers a mental training which cannot perhaps be so well effected in any other way. Such studies of the dawn of civilization may well be introduced into the junior classes of our schools (seven to nine or ten years),

and where intelligently worked, will help to bridge the gap that sometimes exists between the kindergarten and the upper school, and will form an admirable basis for the more formal study of history and geography.

The home life of the children is the central theme of many of the talks and plays of the infants' school and kindergarten. From this we may pass naturally to a picture of 'long, long ago', and thence to the evolution of the common objects of everyday life and the imitation of simple industries. Like other returns to nature, this is welcomed by the children, and it provides admirable facilities for experimental handwork. In an agricultural district a study of the growth of corn in any special locality may be compared on the one hand with the simple methods followed by our forefathers, and on the other with those at present employed under more primitive conditions. This will provide opportunities for tracing the development of implements from the early crude stone or wooden makeshifts to the more elaborate tools or machinery in use to-day. The evolution of the spade used by their fathers in gardening is an interesting study for the children, who might trace its course through such stages as the following :

1. The pointed digging stick.

2. A similar stick weighted with a perforated stone, which served as foot-rest.

3. A digging stick with a one-sided blade, to which was tied a foot-rest, made of a forked piece of wood. This developed into a similar implement made from a single piece of wood.

There might be parallel developments, including spades made by tying the handle to a blade of bone, perforated to carry the end by which it was attached, and a similar one made in one piece of wood. Comparisons with the baker's peel and the child's wooden spade will naturally suggest themselves to the children.

4. A more developed blade similar to No. 3, and shod with iron.

5. Spades with symmetrical blades, such as were first used in England in the seventeenth century.

Children should be allowed to experiment in their gardens with the simple digging stick, and to suggest any improvement which they think possible with the resources the early agriculturist would probably have had.

Primitive hand-ploughing might be tried. The children at the Fielden Demonstration School suggested the use of a forked bough, and devised means for working it so as to cut open the soil and leave a furrow. Where there is no garden the ploughing and harrowing may be done in the sand-tray with tiny tools made by the children.

A study of the work of the miller might be accompanied by that of the development of the mill from simple rough stones, such as the rubbing or beating stone and the various forms of quern to the simple windmill and waterwheel. The construction of the latter provides suitable work for the boys.

Among other problems that may be selected for study and for helping children to realize alien conditions may be mentioned that of the development of the means of lighting from the rushlight to the electric lamp; of the means of transport by land from the woman's back to the modern express train or motor-car; of the evolution of the modern line- or battle-ship from the primitive log of wood.

Much intelligent knowledge will be gained incidentally during a study of inventions and occupations, but its primary object is to explain to the child the essential features of the present time through the medium of the simple conditions of the past.

A study of the early stages of navigation provides an exercise of great interest to boys—an interest that will overflow into their playtime and also throw light on many problems in geography and history. The reading of *Robinson Crusoe* initiated a group of nine-year-old boys into the making and floating of small

rafts ; these were formed by tying together sticks and reeds. An account from *The Swiss Family Robinson* of the method employed for floating the animals from the wreck to the mainland suggested the collection of a number of corks and small empty tins, and attaching them to the rafts in order to buoy them up when loaded. A description of the floats made of inflated skins of animals, such as were used for river traffic in ancient times, and still found in use where great conservatism has retarded progress, connected their experiments with the river-craft used in ancient and modern times in Mesopotamia, on some parts of the Nile, and other rivers of the East. The transition from flotation to the various devices used for the displacement of water was seen in the construction of a small boat after the model of the coracle used to-day in the rivers of Wales and on the west coast of Ireland, where it is called a curragh. This illustrated the navigation of the Ancient Britons and offered a basis for comparison with the Eskimo kayak and umiak which had recently been made.

Fig. 68. A Primitive Hut.

Each individual application of the above theories will vary from every other. Considered as a co-ordinating centre for children's handwork the reproduction of industries provides outlet for many different forms of activity and scope for each individual child. It demands much thought from pupil and teacher. In the early stages all so-called ' subjects ' will grow out of the work. The children will read the first pages of man's

story in his adaptation to his physical surroundings, his subjection of the beasts, and his tilling of the 'good brown earth', or in the gradual emergence of his dwelling-place from a mere nest in a tree or hole in a cave to a solid well-finished house of brick or stone. In considering the various phases of man's upward struggle, many elements of earth-knowledge will be acquired. Ideas of number will arise out of the work in historic order through the numbering of the flocks and herds, the measuring of the ground, or the barter of produce. The mysterious hieroglyphics of the writing and reading lesson may be approached through the picture-writing which represents man's first attempt at graphic expression, and also that of the little child.

Problems in connexion with the early development of such industries as basketry, weaving, pottery, and needlework may be worked out in any school. Many suggestions for applying the development method of dealing with such industries may be found in the chapters on these subjects.

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The School and Society (University of Chicago Press, 6*s*.).
The Place of Industries in Early Education, by K. E. Dopp.
Origins of Invention, by O. T. Mason.
The Evolution of the House, by S. O. Addy.
The Lake Dwellers of Switzerland and other parts of Europe, by Ferdinand Keller.
The History of Mankind, by F. Ratzel.
The Story of Primitive Man, by Edward Clodd.
Tom Tit Tot, by Edward Clodd.
Anthropology, by E. B. Tyler.
Primitive Culture, by E. B. Tyler.
Early Man in Britain, W. Boyd Dawkins.
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Influences of Geographic Control, by E. C. Semple (Constable & Co.).

Early Modes of Navigation, by Col. Lane Fox.
From the Niger to the Nile, by Boyd Alexander.
History of Egypt, by J. H. Breasted.

CHILDREN'S BOOKS.

Days before History, by A. R. Hall (Harrap & Co.).
The Cave Boy, by M. A. M'Intyre (Harrap & Co.).
The Tree Dwellers, by K. E. Dopp.
The Cave Men, by K. E. Dopp.
The Later Cave Men, by K. E. Dopp.

CHAPTER X

HANDWORK IN CONNEXION WITH HISTORY

A study of primitive life and of the development of industries forms a natural and an interesting introduction to that of national or local history. The method of research followed by students of prehistoric times in building up a picture of life in bygone ages may to a limited extent be applied to the teaching of children. Thus the dwellings, the methods of obtaining and preparing food and clothing, the warfare and the social life of early peoples may be compared with those of existing primitive civilizations. A story of prehistoric tree-dwellers seems more likely to be true when illustrated by the life of the tree-dwellers such as may be seen to-day in South America or Africa. That of the early lake-dwellers in Europe or the British Isles is given an air of reality by comparison with their counterparts in Venezuela or New Guinea, while the picture of ancient tent-dwellers gains greatly in fullness of detail and in interest when compared with the present-day Kirghiz shepherds and with other pastoral or nomadic peoples.

A reconstruction (in miniature or by dramatization) of characteristic and interesting scenes from the social life of a people, and of their contemporary arts of peace and of war, may offer profitable outlets for children's activities. While the love of make-believe is utilized in the dramatization of scenes, the simple properties can be constructed by the children. Many characteristic scenes which cannot be acted can be built up on a small scale in any suitable medium.

Such handwork will usually be introduced through

the medium of oral instruction. During this work the children can join and aid the teacher in the construction of simple stories for reading from the blackboard. From about the age of eight years onward the children should be encouraged to supplement their oral instruction by their own reading. A library of simple illustrated books should be available for reference. The research necessary for a moderately accurate representation, whether in the form of a tableau, a simple impromptu play, or a miniature scene, will give much zest to study.

Suggestions for handwork in connexion with the history lesson will be found in the chapters on paper cutting, cardboard modelling, pottery-making, drawing, as well as in that on primitive industries. The formulation of a suitable and well-arranged series of handwork exercises in connexion with a course of history should not be difficult. As, however, the child's school life is short, and hence the possible subjects somewhat limited, it is important to make a choice of such as will minister most effectively towards a knowledge of the more fundamental features of the work.

During the earliest stories of the historic age, when the ideas of prehistoric times gained during studies of primitive life are linked to world history, some of the wonderful Assyrian and Egyptian buildings might be constructed with bricks or modelled in clay, paper, or cardboard.

Greek and Roman life might be illustrated by building with bricks or modelling with clay or cardboard small reproductions of their dwelling-houses, their temples, their theatres.

Some hint of the way in which the arts, the learning, and the culture of the Greeks were assimilated and developed by the Romans might be suggested symbolically by constructing with bricks, clay, paper, or cardboard a Greek and a Roman building, and showing the modification effected by the Romans through adding the arch.

Greek and Roman chariots and war-ships might be modelled in various materials. Some idea of the unequal contest between the Romans and the Britons might be given by working out a scene in the sand-tray or in paper cutting, when the contrast between the fighting power of the fully armed and equipped Romans and the barbaric and relatively defenceless Briton might be brought out. This might be illustrated by acting such a scene as the landing of the

Fig. 69. Greek Chariot.

Romans, after which the children might co-operate to reproduce it in a large sand-tray or paper-cutting illustration.[1]

Plans of battles may profitably be worked out by the younger children in a large sand-tray. In the later stages it is generally desirable to make relief maps or to draw plans of the battle-fields and to indicate the position of the opposing armies by such means as tiny strips or squares of coloured paper.

[1] A very effective paper-cutting illustration was done by some children of about seven years at Mr. Woodcock's school, Mornington Road, Bingley.

Ancient Britons

The life of the Ancient Britons might be illustrated by the construction of such objects as a typical British dwelling, a coracle, a raft, horned helmets, shields, weapons, and chariots. As a rule the object to be constructed must be fully described and sketched. If possible pictures should be shown or similar objects should be examined during a visit to a museum. The small huts in Figs. 71 and 72 were made by children

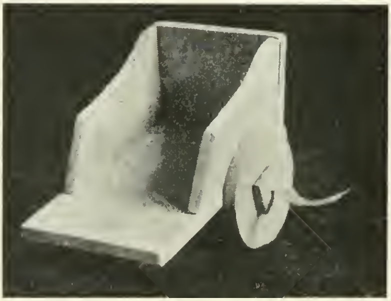


FIG. 70. British Chariot.

between the ages of seven and eight years in imitation of the conical-shaped dwellings in which the Britons lived during the winter.

Suggested method. Interest in such dwellings might be aroused by an adaptation of the account given in Traill's *Social England.* 'The homesteads were scattered along the borders of the woods, between the pasture lands and the hunting grounds. Each homestead is large enough to contain a whole family in its one room. It is a square or round edifice, built of unhewn or roughly hewn trees placed on end, with a roof of interlaced boughs covered with rushes or with turf.' The children could suggest the material they think suitable—grasses, rushes, leaves, twigs,

turf, cardboard for foundation, &c. Each one might collect such material in readiness for the next lesson. The teacher will probably have to supplement and often to supply material for the children's use.

Fig. 71. British Hut woven from Willows and Rushes.

Fig. 72. British Hut daubed with Clay.

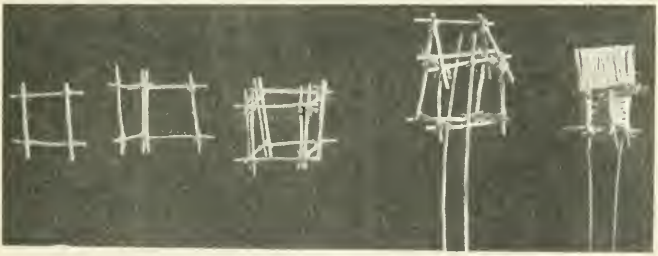


Fig. 73. Details of Lake Dwelling.

When the work of construction is started each child must individually face the problem of using the material to hand in the most suitable way for carrying out his purpose. Where the children lack initiative the

FIG. 74. Lake Village.

teacher must suggest and stimulate. Sometimes she will make a model herself. After the model is finished each result should be discussed, and the children will learn from each other, and thus be better equipped to tackle the next problem. Such finishing touches as the peopling of the huts with tiny skin-clad figures, the placing of a small stone in the middle of the floor for a fireplace, and the provision of a hole in the roof for the escape of the smoke, are much enjoyed.

FIG. 75. Stonehenge.

Where facilities exist a group of such huts as children can make might be combined to form a miniature forest or hill-top village, or such a 'city of refuge' as the crannog which has been discovered near Glastonbury. Such villages, says Windle, 'afforded secure places of retreat from the attacks of enemies, or were the fastnesses of predatory chiefs or robbers, to which might be conveyed the booty of a marauding excursion, or the product of a cattle raid.'[1]

The hill-top village might be surrounded by earthworks and crowned by a stockade, while for the lake-

[1] *Life in Early Britain.*

village a platform of clay and sticks must be erected in the basin of a miniature lake, and enclosed by a stockade.

A model of Stonehenge, constructed more or less to scale, will help the children to obtain some idea of the vastness of the work of raising such a gigantic circle of stones.

Later History

The settlement of the Saxons, the fierce invasions of the Vikings, and the Norman Conquest suggest many suitable subjects.

While studying the social life of the Saxons the transition from the settled agricultural life might be emphasized by allowing the children to construct the implements and primitive tools used in the cultivation of the ground, and in gathering and preparing corn for food. Among suitable models may be mentioned the ox-cart with its solid wheels, the simple plough, the flail used in threshing, the sieve for winnowing. The centre of the farm life might be symbolized by the construction of a simple wooden dwelling surrounded by outhouses.[1]

A model of a Saxon village or homestead, with the thane's house surrounded by the houses of his tenants and servants, and fenced around by a protecting hedge, would offer many points for comparison with the more primitive and isolated life of the Britons.

The Saxon, Danish, and Norman ships all make interesting subjects for drawing, paper-cutting, and constructive work. These models, when made, may be kept and used again and again to construct fleets and to take part in make-believe battles and voyages.

Should a picture of the Bayeux tapestry [2] be at hand for children to study, a wealth of suggestions for work

[1] Such a picture as that in *The Birth of England* (Harrap) with the text on Saxon home life would help children much in getting a concrete impression.

[2] Horace Marshall publishes sections of the Bayeux tapestry in a size large enough for class use.

on the period round about the Norman Conquest might be obtained. In studying the development of the arts of war, the battle of Hastings might be interesting, since it marks the transition from Anglo-Danish to Norman tactics. Such features as the strength of Harold's position on the top of Senlac Hill, the contrast between the close and compact formation of the Saxons and the looser formation of the Norman infantry and mobile cavalry, can be suggested through the medium of a model or plan. When any attempt is made to show in right proportion a considerable part of the battle-field, the differences in the equipment of the two armies cannot be effectively brought out; the combatants can only be indicated diagrammatically, e.g. by bits of coloured paper or cloth. Details of the fighting and other points that are missed from a broad survey of the whole battle-field may be given later by working out scenes containing only a few figures.

Castle-building

Castle-building, evolved from the moated mound of the Saxon to the elaborate stronghold of the early part of the fifteenth century, will bring before the children concrete pictures of life in mediaeval times. They can build up simple models to illustrate a few main types of fortress, such as:

(*a*) The Anglo-Saxon *mound-castle*, of which an illustration may be seen in the Bayeux tapestry.

(*b*) The Norman '*shell-keep*' and *square keep*.

(*c*) *Twelfth-century* castle, showing developments due to the influence of ideas brought home by the Crusader; e.g. Chateau Gaillard, the castle built by Richard Cœur de Lion.

(*d*) The '*Concentric*' or 'Edwardian' castles of the thirteenth century.

Mounds such as were built by the Saxons might be constructed. 'First was cast up a truncated cone of earth, standing at its natural slope, from twelve to

even fifty or sixty feet in height. This mound was formed from the contents of a broad and deep circumscribing ditch. Connected with the mound was also a base-court or enclosure, sometimes circular, but more commonly oval or horseshoe-shaped.' The mound and the encircling moat were fortified by means of palisading formed of stout stakes of wood. The children might build a small mound of earth or sand, representing the moat by placing silver paper underneath the banks of the ditch, stockading with tiny match-sticks, and placing a 'house' within the defences. They might then be shown how the Normans took possession of these mounds and fortified them 'after their own manner',[1] by replacing the palisading with massive stone walls, and how buildings of wood or stone were added inside the outer wall, leaving clear the central space for such purposes as the protection of cattle during a siege. Children can represent these developments by replacing the match-sticks with strips of cardboard or a wall of clay, and by placing inside this outside wall a number of cardboard boxes or paper models of suitable size to stand for the buildings.

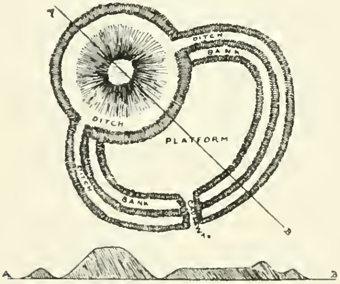


Fig. 76. Anglo-Saxon Burh.

They will be told that these adapted fortresses became the so-called 'shell-keeps', like Windsor and Berkeley Castles. From a picture or plan of Windsor Castle the children might trace the probable course of an original encircling wall. We have already seen that the rectangular Norman keep, such as still exists in

[1] Windle, *Life in Early Britain*, p. 177. See also. Barnard, *Companion to English History*, p. 62; Oman, *A History of the Art of War in the Middle Ages*, p. 111.

the Tower of London, Rochester, and Norwich, lends itself to construction in cardboard.[1]

The Crusaders found military architecture in the East much in advance of that of the West, and acquaintance with the great strongholds of the Levant changed their whole conception of what a fortress should be. Instead of depending on the keep as the chief stronghold and the outer wall as a protection of secondary importance, they learnt to strengthen the latter by the addition of towers at frequent intervals, to defend the approach by a gatehouse, and to regard the keep, when it existed, as a last refuge for its inhabitants when very sorely pressed indeed. Chateau Gaillard is a fine specimen of the improved castle-building of the period, as it exhibits very clearly the advantage which can be taken of the physical features of a site. In it we find two outer wards, well set with circular towers, and one inner ward in the wall of which the keep is inserted.

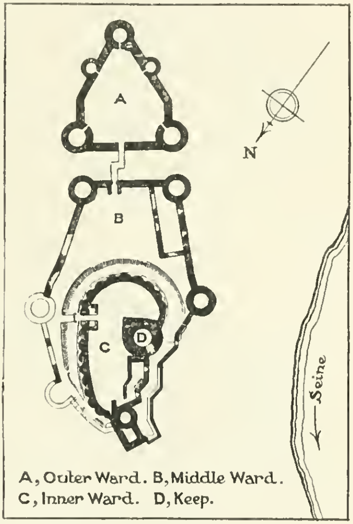
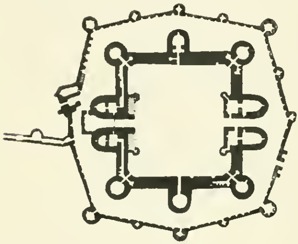


Fig. 77. Chateau Gaillard.

The last-named building is not square like the early Norman towers, but rounded so as to offer no 'dead angles' to the besieger.[2] The main features of a castle of this type can be roughly suggested in cardboard, in damp sand, in clay, or in a combination of these and other materials. The method of developing the later

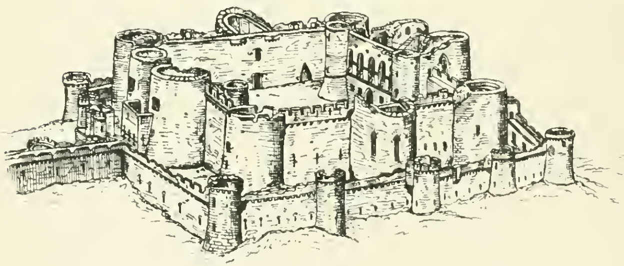
[1] See Chapter V, p. 89.
[2] *Companion to English History*, F. P. Barnard, p. 63.

castle from an earlier type generally appeals to the children, and when a course of castle-building is taken, the walls, towers, gates, and other buildings can generally be used over and over again to illustrate various types of castle. If a very quick method of construction is desired 'towers' made of circular cardboard boxes may be set in the cardboard wall used for the first 'shell-keep'. The work may be shared among a number of children, one of whom could make the gate-house, a second the drawbridge, while a third undertook to separate the inner from the outer ward.



A

The '*Concentric*' *castle* differed from the general type of twelfth-century



B

Fig. 78. Beaumaris Castle: A, Plan; B, Elevation.

castle because the wards were placed one within the other. Thus the inner wards were completely surrounded by one or more outer lines of defences. Beaumaris, Caerphilly, and the Tower of London,[1] are good specimens of castles built on the concentric plan. While building these castles the children will see from picture and from plan how the available site or remaining

[1] *The Art of War in the Middle Ages,* by C. W. C. Oman, pp. 539-42.

fortifications governed the plan of the castle-builders. The effect of the former may be seen in castles built on positions of great natural strength, that of the latter will be brought out in developing the plan of the Tower of London, where the great strength and good preservation of the Norman keep induced Henry III to depart from the usual fashion and leave the keep instead of an open space as the central core.

As a parallel exercise to castle-building, nothing is more after a boy's own heart than the *construction of some of the military engines* used in the Middle Ages, such as the *mangon*, the *balista*, and the *trébuchet*, worked respectively by torsion, by tension, and by balance. The *mangon* was a stone-throwing machine and consisted of two strong fixed upright posts 'joined by means of doubled or quadrupled ropes'. The *balista* was a large machine on the principle of the crossbow for shooting large darts and javelins, and the *trébuchet* and balance for hurling stones.

Boys find much delight and amusement in making and working small models of these engines. For indoor use missiles made of wads of paper can be substituted for stones.

Armour

The construction of armour is a valuable correlative to the study of history, and it has a special interest for boys. It fits in with the boy's love of fighting and of acting. It brings the 'far-off things and battles long ago' near to him. In studying the development of defensive armour perhaps the shield claims our first attention; it is easily copied in cardboard, it is a valuable property for use in the dramatization of history, and its form, size, and device throw light on the military tactics of the period when it was used. From the tenth century onwards till about the middle of the eleventh the heavy round wooden shield gave place to the large shield shaped like a kite. While the armour of the warrior grew and covered his body from

top to toe the shield slowly diminished in size from 3 to $1\frac{1}{2}$ feet, and finally, about the beginning of the

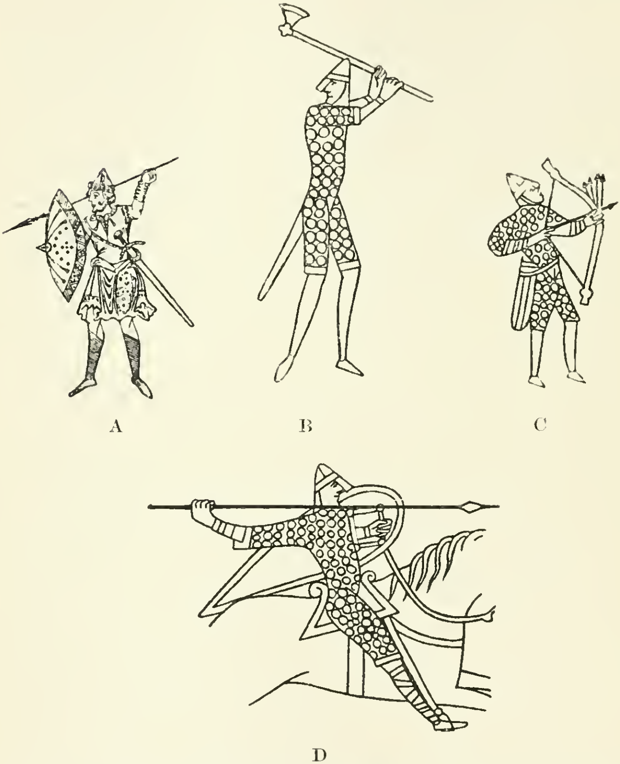
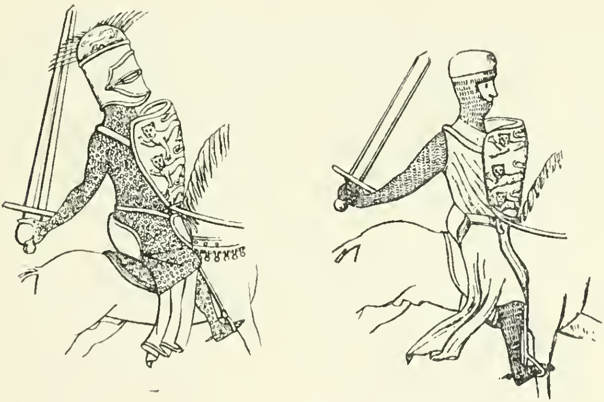


Fig. 79. A, Anglo-Saxon Soldier; B, English Axeman, 1066; C, Norman Archer, 1066; D, Norman Horseman, 1066.

sixteenth century, it was cast aside as an unnecessary encumbrance.

The advantages of each type of shield are easily seen when they are used by the children in sham fights. They discover that the long kite shield was a better

protection than the broad round one, because it shielded a larger portion of the body, and enabled its bearer more readily to watch the movements of his adversary. The children like to use their shields like the old-time warriors did ; thus they join them into a 'shield-wall', or they pretend to carry home a wounded comrade on the large kite-shaped shield. They find that the small triangular shield is chiefly useful to ward off the blows of the adversary.



A B

Fig. 80. A, King Richard I ; B, King John.

The early stages of the development of body armour are simple ; the children can trace it from the Saxon times, when it consisted of a *helm*, made perhaps of bone and metal, and of a *mail-shirt* reaching to the hips. For the better protection of the face, neck, and throat, the helm grew until with its appendages it reached the shoulders, and to protect the knees from sword-cuts the mail-shirt was lengthened until it reached the knees. The two garments were combined into one about the end of the eleventh century.

Still further lengthening necessitated splitting the

lower part of the garment. This divided garment is seen in pictures of Richard I. The introduction of metal plates under the chain-armour led to the adoption of plate-armour from about the middle of the thirteenth century. A good idea of the armour worn by a few typical warriors might be obtained by dressing large dolls or some of the children in make-believe armour. Among the most likely to be successful are :

1. Early Saxon in mail-shirt, helm crested with an iron figure of the boar, and armed with spear and large round shield.

2. *Danish* mail-shirt and pointed helm, round or kite-shaped shield, armed with two-handed Danish axe.

3. *Norman* hauberk, continued over the head in the form of a hood above which was worn a pointed helm with a nasal, mail-shirt, armed with spear and kite-shaped shield.

4. *Richard I*, very heavy helmet, generally flat-topped. The costume of Richard is interesting because he was the first king to wear the arms of England (three golden lions on a red ground) embroidered on his surcoat.

Very effective chain-armour may be knitted in string and painted with grey or aluminium paint. Plate-armour may be made from cardboard covered with silver paper, or from brown paper painted black. Billycock hats, from which the rims have been cut away, make excellent headpiece foundations for helmets. The additions and changes of shape which fashion demanded may be made by adding pieces of cardboard or by covering the whole headpiece with stiff paper. The development of weapons will follow that of the armour. Among history plays the tournament is a great favourite and offers a good incentive for making armour.

The possibilities of handwork teaching in connexion with history are endless. Such handwork is, however, not well chosen when it illustrates the less important features of the period the children are studying. It

should lead them as directly as possible to the most interesting part of the subject, it should make the work a delight to the child, and it should minister to the development of permanent interests.

Bible Stories

The scenes in which many of the Bible stories are laid are quite outside the children's experience. Sometimes

Fig. 81. Grinding corn.

vivid sidelights on the period are thrown through the medium of well-told and well-illustrated stories from the history of Babylon, Assyria, and Egypt; sometimes, by the aid of pictures and of such books as Robert Bird's *Joseph the Dreamer*, *One Hundred Bible Stories*, and *Jesus the Carpenter*, the children can build up a background for themselves. The simple pastoral and agricultural life of patriarchal times, the gradual development of the religious ceremonial of the Hebrews, and the gorgeous Eastern life of the vanished Egyptian and Asiatic civilizations offer many possible subjects

for children's activities. The illustrations below show the work of young children in connexion with Bible

FIG. 82. Moses in the Bulrushes.

stories. References to the grinding of corn are frequently met with in the Bible. The making of such a model as Fig. 81 will help the children to understand them. The 'upper' and 'nether' millstone were modelled in

clay. Two holes were made in the 'upper' millstone, one for the handle and a second for feeding the mill with corn. The process has been described thus:

'As the operation began one of the women with her right hand pushed this handle to the woman opposite, who again sent it to her companion—thus communicating a rotatory and very rapid motion to

FIG. 83. A Baby in the Manger.

the upper stone; their left hands being all the while employed in supplying fresh corn, as fast as the bran and flour escaped from the sides of the machine.'[1]

Figs. 82 and 83 illustrate the work of very little children. Fig. 82 represents Moses in the bulrushes. The tiny ark was made of rolled rush by a method explained in Chapter XII. Fig. 83 is made of rough wood and stiff paper to illustrate a rough stable, with the baby in the manger.

[1] Dr. Clark describing a visit to Nazareth, quoted in *Scripture Manners and Customs*, p. 21.

Fig. 84 was made by children of six years old to illustrate our Lord's first miracle, 'Turning water into wine.' The tables were modelled of brown paper, the dolls made of paper, and the 'waterpots' modelled in clay. Contrary to correct Eastern usage the inner side of the table is occupied by diners instead of being left free.

Fig. 84. An Eastern Meal.

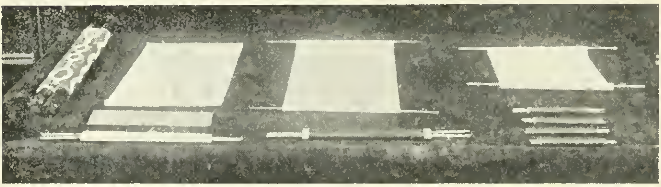


Fig. 85. A Rolled Book.

Fig. 85 illustrates the making of a rolled book, and was an exercise done by children of five years, after a story of 'Jesus in the temple with the doctors'. On the left is seen a large model (made by the teacher), then a piece of paper and two sticks. The paper was stuck to the sticks and rolled as shown.

Books for Reference

Teachers' Books.

Life in Early Britain, by B. C. A. Windle.
Social England, by H. D. Traill.
A Short History of Ancient Times, by P. V. N. Myers.
A Concise History of Europe, by A. H. Forbes (R. Holland & Co.).
Companion to English History, by F. P. Barnard.
The Art of War in the Middle Ages, by Charles Oman.
Arms and Armour, by Auguste Demmin.
The Development of the Castle in England and Wales, published by The Historical Association. 6 South Square, London, W.C., 6*d*.
Piers Plowman Histories. Philip & Son.
Encyclopaedia Britannica—(Articles on Castles, Armour, etc.).
The First of Empires (*Babylon of the Bible*), by W. S. Chad Boscawen.
History of Egypt, by Dr. E. A. W. Budge, vol. i.
Babylonians and Assyrians, by A. H. Sayce.
A History of the Babylonians and Assyrians, by G. S. Goodspeed
Scripture Manners and Customs. S.P.C.K.

Children's Books.

The Dawn of British History, by A. Corkran.
The Birth of England, by E. Ross (Harrap).
History of England, by Miss Thomson.
The Making of the Homeland, by H. Haynes-Collins.
Joseph the Dreamer, by Robert Bird.
Jesus the Carpenter, by Robert Bird.
One Hundred Bible Stories, by Robert Bird.
Guides to British Museum Collections.

CHAPTER XI

HANDWORK IN CONNEXION WITH GEOGRAPHY

THE study of geography may be approached through many avenues. Through the medium of the sand-table, the individual sand-tray, or a portion of the school garden, the child can reproduce roughly the school and playground, a house and garden, a farm, a village, or a street, and thus prepare the way for the construction of more exact plans. From experiments made with flags, toy whirligigs, windmills, and weather-vanes, he learns incidentally the cardinal points and the characteristic effects of various winds.

The development of the picture calendar kept by the younger children into a daily record of observations on the state of the weather, the directions and force of the wind, the altitude of the sun, and the time of sunrise and sunset, provides valuable data for future lessons.

The construction of a mariner's compass will do much to awaken in the boy a desire to use a tiny compass, and thus may be formed the habit of orientation, which will help toward the development of a geographical sense.

The small child observes with interest the carts from the country with their loads of vegetables, of fruit, or of eggs and butter ; he makes rough models of such vehicles ; he plays 'greengrocer', 'milkman', &c. He visits the market ; he reproduces what he has seen in various ways.

If children in a class combine forces to make a model of a market from their own observation of a real one, many ideas of the interdependence of town and

country will grow out of such work, and will form a good basis on which sound notions of commerce may be formed.

Such an exercise might profitably be followed by making a model of a familiar railway station, of a sea-side scene, such as a fishing village or a harbour with its ships, and a consequent growth of ideas as to our position, our commerce, and our relation to other lands would probably result.

Since young children's interests are personal and particular, the first study of geography is often approached from the social side.

Handwork may be a valuable aid in illustrating life in other times and places, and in making it live before the eyes of the pupils. Even in young children an appetite for stories with a geographical setting may be created by giving interesting narratives of child life under varied conditions, and the first steps towards 'thinking geographically' may be taken, as through story and song the child first begins to realize that

> There are babies in the highlands,
> And babies in the low;
> There are pale ones wrapped in furry skins
> On the margin of the snow,
> And brown ones naked in the isles
> Where all the spices grow.[1]

As the life and doings of these little dwellers in far-away lands are brought close to the young pupils, many forms of handwork, both illustrative and expressive, will grow naturally out of the subject, and will contribute more than a little towards keeping the work alive and in close touch with the child's natural instincts.

During the next stage a more thorough study may be made of such types of social life as are representative of different world regions. Here the building up of scenes from the domestic life of man in such typical

[1] Christina Rossetti.

regions will go far towards making the study of human geography vivid and concrete.

For this purpose a portion of the school-yard or garden may be set apart.

By the aid of pictures, of descriptive accounts given by the teacher, of discussion, and of children's own reading and research, the children gain preliminary ideas of the particular people in question. Thus they represent in miniature, scenes from the frozen North, the pine forest, the grassy steppe, the hot, barren, sandy desert, the tropical forest, from mountain highland or fjord coastline.

Dolls may be dressed to represent the people of each region; their dwellings may be constructed; characteristic animals, means of transport, tools and weapons, may be shown. The work may be assigned to groups of children, and thus the tiny village will be the result of co-operation. As a rule it will be found advisable to do most of the constructive work in the classroom, and then to place the models in position in the part of the garden prepared for the purpose.

While representing the life of such people as the Eskimos on the frozen coast of the Arctic Ocean, that of the Lapps in the barren regions of the Tundra, or that of the Kirghese shepherds in the steppes of Asia, the tent or summer dwellings and the more permanent winter dwellings should each be constructed and placed in a suitable setting.

When such work is in progress, the children devote themselves with zest to the spontaneous study of geography, and books describing the life and conditions of the people in question are in great demand.

Eskimos

Small models of the half-underground houses built by the Eskimos of Greenland and North America may be made in the school garden by digging out round or oval pits in the ground to the depth of about a foot.

The children might then build the walls of alternate layers of earth and sod as the Eskimos do. The snow igloo is a favourite exercise, and it will generally be found advisable to construct it in the classroom. Since snow is not often available, it is usually made of clay. The adoption of the Eskimo method of building these dome-shaped dwellings spirally from blocks of clay falls in with the children's love of make-believe; several might co-operate to make one. Thus two or three might each construct a dome for the house, while another fashioned the entrance-gallery, which must be

Fig. 86. Making a Kayak and a Umiak.

skilfully curved to prevent the cold wind piercing its way in and driving in the snow. Another might make a slab for the door. Then all the makers could combine in joining the parts. A window of membrane obtained from some semi-transparent material, such as a cake of glue or of gelatine, might be added while the domes are being built. A comparison of this dwelling with our own will be an interesting exercise. The children will see how much pains the Eskimo takes to keep his snow hut air-tight, and a story of Mrs. Peary's sensations in the close, stuffy atmosphere of the igloo where she and her husband accepted shelter for the night will probably be of interest to them.

FIG. 87. Eskimos.

During the summer, when the Eskimos live a wandering life in search of good hunting-grounds for the seal and walrus, the tent made of skins forms their temporary residence. These might be made by the children in miniature from rough material, such as old kid gloves, or any other material available. Their wonderful skin boats may also be fashioned with cane or willow and raffia, covered with skin, like

Fig. 88. Eskimos.

the tent, and their sledges may be made from various materials. Pieces of willow are often suggested by children as substitutes for the bones and walrus tusks used by the Eskimo. The willow must be soaked and turned up to form the runners, and shaped for the kayak and umiak. The method is shown in Fig. 86. The value of the double paddle made from the precious driftwood should be mentioned.

The seals and walruses may be modelled in clay from pictures, or from memory after a visit to the Zoo.

The harpoon and bladder-float may also be made in simple material. The Eskimo adopts the means suggested by nature with wonderful skill. The suitability of the dress and equipment and the food of the Eskimo to their environment may be shown by the fact that practically all the Europeans who have lived and travelled in their country have been compelled to adopt a similar dress, to eat the same kind of food, and to learn their arts of hunting and fishing.

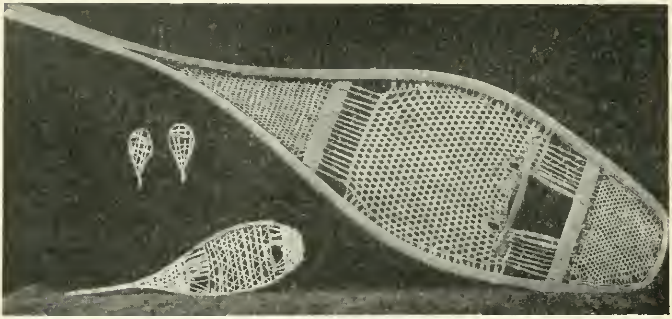


FIG. 89. Snow-shoes.

The model on p. 166 is a suggestion of the way in which a scene may be built up in a corner of an ordinary classroom. Two kindergarten tables were placed together and covered with material to prevent them getting scratched. A background showing two hills with partially melted snow was roughly sketched in. Pieces of stone from a neighbouring rockery, with some coarse gravel, made the coast, while the sea was represented by blue tissue-paper. A sledge, some tents, a umiak, and two kayaks are included. In the winter scene are shown :

(1) *Dogs* modelled in clay, with small sticks inside the legs to enable them to stand, and painted with whitening and ink.

(2) *Sledges* made from cardboard and sticks, whalebone and string, and willow and raffia.

(3) *The Igloos* modelled from clay, and painted with whitening.

(4) The *dolls* dressed in fur or imitation sealskin.

The dressing of dolls in furry material or in skin affords a good opportunity for showing how thick and well made, and how admirably suited to the rigours of the climate, is the dress of the Eskimo. Children gladly bring from home material to dress these dolls. The making of the roomy hood for the baby and attaching it to the dress of the mother provides great fun for the little children. Tiny snow-shoes can be constructed of raffia and cane. The little pair shown in Fig. 89 was made at home by a child of six and a half years.

North American Indians

While stories of North American Indians hold the field of the child's interest, parts of Longfellow's 'Hiawatha' will be much enjoyed.

The wigwams in the scene in Fig. 90 were made from old kid gloves, ornamented with drawings of animals and of heads in pen and ink. They were mounted on poles (made of willow-sticks), stuck into a centre of cardboard and fastened together at the top with a tiny bit of wire or raffia.

The 'dark and gloomy forest' was made of branches of fir-tree, while a sheet of glass over tissue-paper represented the 'shining Big Sea Water'.

The canoe on the left, like that of Hiawatha, was made from the 'white skin wrapper' of the birch, while instead of the tough fibrous roots of the larch-tree used by Hiawatha, the tiny canoe was caulked and sewn with raffia. The other canoe was made of cardboard, because the children could manage better with this than with wood-skin. When an Indian bow

and arrow is made, the description of Hiawatha's method might be given:

> From a branch of ash he made it,
> From an oak-bough made the arrows,
> Tipped with flint, and winged with feathers,
> And the cord he made of deerskin.

Fig. 90. American Indians.

Japanese Village

This was a centre for handwork while the children studied the social life of the Japanese.

The children gained their ideas partly from descriptions given by the teacher, who had visited the Anglo-Japanese Exhibition, partly from pictures and postcards, and partly from reading such little books as *Life in our Own and Other Lands* (Chambers) and *Little Folk of Other Lands* (Nelson). Short suggestive talks illustrated by pictures were followed by the dramatization of home scenes, by the construction of Japanese houses, screens, low tables, &c., by sketching from life children dressed in such properties as a kimono, or a coolie hat, by painting landscape scenes such as Fujiyama, and such characteristic Japanese objects as fans, lanterns, and umbrellas.

Illustrations of Japanese people, Japanese dwelling-houses in their beautiful gardens, temples approached by wooden arches (Torii), and surrounded by booths and tea-houses, were hung about the room one or two at a time, as the story of Japanese life and doings was unfolded. They helped to provide the necessary 'atmosphere', and also served as a record of the story.

The doings of Japanese children both at school and at play were of great interest. The Japanese child squatting on the floor and working at a low stool or table was imitated. During a brush-drawing lesson the children illustrated a Japanese writing lesson, 'painting the words one under the other, beginning at the top right-hand corner, and finishing at the bottom left-hand corner.'

Sometimes at play-time Japanese games were in fashion. Some children tried to fly kites, others played 'battledore and shuttlecock', while others engaged in 'top-fights'.

The Feast of Dolls was an interesting subject which the children might imitate at home. The Feast of Flags would be good fun for boys, and it might perhaps be played during play-time for one or two days. Such 'scenery' as a paper 'carp' suspended from the school door, and a few flags to decorate the playground wall could easily be provided, and the children might join in a mimic battle with sticks, such as are used for the 'bean-setting' dance. The flag-capturing in such a battle is great fun. The bamboo horns and trumpets blown to frighten away the 'ogre god' might be compared with the May-horns still blown on May Day in Oxford—and probably originally for a similar purpose.

The children at Holy Trinity School sang Jap songs as they hobbled and fanned each other with improvised paper fans. It was found that many home scenes from Japanese life lend themselves to being 'played' by children. Thus a Japanese meal was acted by squatting on the floor and pretending to eat rice from a bowl with chop-sticks.

An afternoon tea with the arrival of visitors was acted by the children, dressed in kimonos and sandals. The lady of the house poured out tea from a low stool. The visitors slipped off their sandals before entering the room, and went through the orthodox 'kowtowing' in correct style, after which the hostess dispensed the necessary five cups of tea as politely as possible, while the company talked of things Japanese. During English lessons such word-pictures as 'I looked upon the cherry that blooms by the fence, down by the woodman's cottage, and wondered if an untimely snow had fallen upon it,' were memorized, and the children wrote little stories about the things which pleased them most. These little compositions showed that their interest had been most keenly aroused.

Before the construction of the houses, shops, &c., was begun, a picture of a typical Japanese house was shown to the children, who noted that it was only one story high, that the posts were of bamboo, and the whole structure very slight and flimsy, and that the roof was of thatch; that it was not built into the ground like our houses, but that it rested on large stones placed on the ground. To illustrate its lightness and portability the teacher referred to a 'house-moving,' when the whole construction is lifted and carried off.

Why is this house so different from ours?

A picture of Fujiyama suggested the presence of volcanoes, and a brief account of the frequent and severe visitations of the 'great earth-dragon' was given. The children were asked what would happen to us if an earthquake occurred in England. The heavy roofs and stone walls would fall on people and crush them. This house has not far to fall. It is so light that it would not hurt us much if it fell on us.

The teacher showed a small model of a Japanese house which she had constructed in paper. The front was removed, and children saw that the interior con-

sisted of a single room. They were told that the Japs love to have the front of their houses open. Why? 'So that they may enjoy the fresh air and sunshine.'

By means of sliding paper-partitions the children were shown how the screens, sliding along grooves in the ceiling, served to divide the one room into smaller ones. They saw that, as there was no 'upstairs', this room must be used as a sleeping-room.

FIG. 91. Japanese Village.

This model was now handed round the class, and a discussion on the method for construction followed. They then tried to make the house, adding the low, gently-sloping roof last. When all had finished a house, partitions of paper to divide it up into smaller compartments were made. The children then played at preparing the room for use as a bedroom by putting in the partitions and placing tiny mats on the floor for beds. They were interested in calling rooms intended for one, two, or three beds, 'one-mat', 'two-mat' rooms, &c. The temple was made by adding a number of small houses of different sizes, gradually getting smaller as the top is reached.

Some of the houses constructed are shown in the little picture. The archway placed at the entrance to the temple was made by tying sticks together with raffia. The Jap's purpose seems to be to add something of the dignity which from the prevalence of earthquakes cannot be given by means of spires or high towers.

Figures to represent the inhabitants were modelled from plasticine, and rickshaws were constructed and shown with their 'man-horses' ready to start.

Suggestions of 'Cherry Blossom Land' were given by placing here and there about the street tiny branches of trees, to which bits of paper had been fastened to represent flowers.

Kaffir Kraal

The Kaffir scene[1] was built up by children of eight years to illustrate the life of the natives on the grass lands of the South African veldt. The life on the veldt was compared and contrasted with that of the Indians on the prairies and savannas of the New World, of the Kirghiz or nomad shepherds of the Asiatic steppe, and with that of the pastoral peoples living in similar regions of South Russia, Hungary, Persia, and Asia Minor.

The children looked at pictures of veldt scenery. They noted the kopjes and the 'scrubby bush', the flaming cactus—the artist's attempts to show the glorious atmospheric effects of sunrise and sunset—the 'tender blues and purples' of distance.

They compared these pictures with others of wooded regions, and of the more tropical veldt, with its riot of colour and its variety of trees, palms, and ferns.

They read descriptions of the life and general characteristics of the Kaffirs living in South Africa. Their interest was aroused in the giant beehive-like structures which served them as homes. They dis-

[1] Made at Holy Trinity School, Oxford.

cussed the shape of the hut, the materials of which it was made. They found that the Kaffir used boughs of trees for the framework, filled in with reeds or straw; that he sometimes plastered the whole with mud, and sometimes made the walls of wattle and daub, and thatched the roof with straw or reeds.

They decided to make their walls of clay on a circular foundation of cardboard. After the walls were built up, the framework for the roof of small willow sticks

Fig. 92. A Kaffir Kraal.

was fixed. The thatch was made by taking a bunch of raffia, cutting it to the necessary length, tying it at one end, and fixing it on the roof. The door was made from cane and raffia. The cactus plants seen in a picture[1] were made from the fruits of Cape gooseberries, opened out and cut up. The 'natives' were made from little dolls, and some of the oxen, sheep, and goats were modelled in clay. The men were dressed in 'loin cloths' or blankets, and the women in frayed petticoats. Rude pottery such as the natives use was modelled, and 'sleeping-mats' were woven from grass.

[1] *Peeps at Many Lands*, South Africa, p. 41.

Arab Encampment

This Arab encampment was built up by young children, of between six and seven years of age. Such a scene serves to illustrate the wandering life of these 'people of the tent', as it may be seen to-day among the Bedouin Arabs, and it will also help the children to understand and to enter into the descriptions of the life and times of the early patriarchs as depicted in the Bible.

FIG. 93. An Arab Encampment.

The method of approaching such a study will probably vary with the teacher, the stage of the pupils, or the special purpose for which it is undertaken.

From pictures, blackboard sketches, conversation lessons and stories, many ideas about the nomadic life of the Arabs might be gathered. A teacher's model of the tent would show that it is pitched somewhat as follows :

Rows of poles are driven into the ground to support an awning or covering, which is usually made of black goat's hair. The awning is kept in place by means of cords tied to the tops of the poles, and to pegs or stakes driven into the ground.

The division into two compartments might be shown,

and the children told that most of the Arab tents are so divided ; that the first compartment is for the use of the men, while the inner compartment is occupied by the women.

From their knowledge of these nomads children might infer that the conditions under which they live limit their furniture and domestic utensils to the barest necessaries.

For making the tents on p. 176 the children were provided with a board, some clay, rough sticks for tent poles, a piece of coarse dark material for the tent covering, string for the cords, and tiny match-sticks for the pegs.[1] They placed a thick layer of clay in the centre of the board, stuck in the tent poles, and fixed the covering, tying it down with pegs, as seen in the illustration. The tents were furnished with cushions and carpets, straw mats for sleeping, and by such characteristic objects as tiny handmills, and skins for carrying water, or sheepskin bags for carrying clothing. Two of the former may be seen on the left of the picture. These were made from the fingers of kid gloves ; as the Arab's water-skins roughly resemble the shape of the animal which formerly wore them, bits of kid were pinched in to imitate the legs.

Some of the camels were modelled in clay ; others belonged to the Noah's ark. The palm-trees were made of rough sticks and green tissue-paper.

They learnt that the dress of the Arabs has shown but little variation since patriarchal times, when it sometimes consisted of :

1. An under-garment or shirt with loose sleeves, fastened around the waist with a girdle of leather or wool.

2. A cloak or shawl formed of a square piece of thick material.

3. A head-dress consisting of a handkerchief fastened round the head with a band of dark camel hair.

The dolls in the little tent village were dressed in tissue-paper.

[1] A better foundation might have been made by substituting stout cardboard for the modelling board, or by filling a shallow cardboard box with clay or earth.

Indian Village

While the social life of the natives of the northern parts of India was the subject of story, conversation, reading, handwork, and expression lessons in a class of children of about ten years of age,[1] a visit to the Indian Institute was organized. Here the children studied a model illustrating village life in the North-West Provinces of India.

The central and most striking feature was the house of the zamindar, as the landholder or 'cultivating member of a village community' is called. It stood on a higher level, and seemed to dominate the rest of the village; it was indeed the only building worthy the name of house. In a courtyard which surrounded the house a group of coloured children were playing. The entrance to the dwelling part was through a large portico. In the first large open room the owner was seated in a chair on a platform, from which, with the aid of a clerk, he seemed to be transacting business, and also receiving his visitors.

The thickness of the thatched roof was noted, and it was decided that this was necessary to shield the inhabitants from the hot sun.

The sympathies of the children were aroused on behalf of a tenant who was being seized and brought through the courtyard for arrears of rent.

Scattered about the village were seen a number of mud huts thatched with straw. The children noticed the absence of doors and windows, the darkness of the interiors, the scantiness of the furnishing, and the absence of any appearance of comfort. The shops, which were about the same size as the huts, consisted of mere booths without a wall in front. Hence the whole life of the people must be spent under the eye of their neighbours, and the whole of their work done under the full gaze of the passers-by.

After a general view of these primitive dwellings had been taken, the children examined some of them more

[1] Holy Trinity School, Oxford.

closely, with the object of finding out what each was doing, and if possible deciding what crops the land in the district produced.

1. A beginning was made with the hut of a man who was seated *winnowing grain*. As the children had never observed a similar process in England, they could not, from the small tableau, infer what the man was doing. Therefore the teacher explained that the people choose a day when a strong wind is blowing; take some mixed grain and chaff in a basket, throw it up in the air or let it fall to the ground, when the lighter chaff will be blown away from the grain during its passage through the air. The chaff is then piled up into a heap for the use of cattle, while the wheat is stored for man's use.

2. The *grain-seller* next received attention. He sat on a low table holding his scales, while all around the front of his open shop the floor was covered with numbers of vessels filled with different kinds of grain.

3. The *parched-grain* shop. In the centre of this hut was seen a semi-cylindrical oven containing holes, in which vessels holding the grain could be placed. This was again outside the children's experience, so the teacher explained briefly the method by which the grain is parched. They looked at the door of the oven by which one woman was feeding the fire with leaves and sticks, while another stirred the crackling corn until it was parched.

4. The other craftsmen were observed. The children were specially interested in the potter sitting at work in the midst of his finished and unfinished wares, and in the women spinning cotton.

Agricultural work. Around the cluster of huts were seen miniature fields of tobacco and of pumpkins, each of which was watered by means of various devices, such as a pulley and a skin bag worked by bullocks, a lever, and a swing basket. It was suggested that some of the children should try to construct these tiny models in which the teacher saw concrete points of

departure, from which they might be helped to picture the fortunate conditions under which the labour and care expended by the diligent husbandman in cultivation and irrigation receives its reward in the yield of abundant crops, or the misery of the long droughts and consequent famines.

Such processes in the preparation of sugar as chopping up the green canes ready for crushing in a sugar-mill worked by bullocks, and boiling the juice in a large vessel, seemed to interest the children very much.

The representations of the oxen at work received a full share of attention. The children noted the wooden yoke through which their heads were passed, the primitive plough which seemed to be capable of little more than scratching the surface of the ground, and the clumsy ox-cart.

Each child selected the particular model she wished to reproduce, and made a rough sketch to serve as a guide for classroom work.

As the children constructed their village, the share of each craftsman in the work of the little community was seen. Thus the simple plough and other wooden agricultural implements were contributed by the carpenter, while the spades for digging the soil, the sickle for reaping the corn, and the axes for felling trees, are the work of the blacksmith.

The lamps, the cooking vessels, the jars for storing grain, the large water vessels, are supplied by the potter ; the work of the tanner in preparing the skins of animals is considered to be ' unclean ', and hence must be carried on outside the village.

The weaver is a familiar figure, as flax and cotton thread are spun locally. He strings his loom out of doors under the shade of a tree. Then he usually removes it to the inside of his hut, where most of his weaving is done. Here the light is bad, and as the position in which he sits is cramped he is often as unhealthy as the old-time weavers in our own country, so graphically described by George Eliot.

The village amusements received their share of attention. The snake-charmer, who may be seen playing on his quaint pipes wherever a suitable open space can be found; the animal-tamers, the acrobats and jugglers who provide entertainment for the people, made a special appeal to the children.

General Remarks

When such work is undertaken as a direct introduction to definite geography teaching, it should generally

FIG. 94. An Indian Village.

be restricted to subjects with distinct geographical significance; but little prominence need be given to mere picturesqueness of costume unless it is a reflection of the surroundings; thus while the dress of the fur-clad Eskimo tells much about the climatic conditions under which he lives, the barbaric costume of the Norwegian bride or the quaint peasant dresses of European countries, though interesting, have no such significance. Again, scenes of aboriginal life which are merely striking and grotesque should in the early stages give place to work centring around a few peoples living under typical and well-marked physical conditions.

As soon as the children are accustomed to the work, individual effort and research should be encouraged by dividing the class into groups for the study of various phases of the subject in hand. Thus, while pictures of life in the Arctic and sub-Arctic regions are being developed, many interesting points for comparison and contrast would be found if half the class built up scenes from the Eskimos, while the rest occupied themselves with the Lapps. When time is too limited to do more than suggest the main features of a region, a picture of the life of a purely nomadic race living mainly on milk and its products might be developed side by side with another showing pastoral life in a more or less transitional stage, such as that of the dwellers in the Swiss Alps or among the Norwegian mountains. Life in the coniferous forests of Canada might be compared with that under similar conditions in north-east Russia.

A series of lessons on typical climatic regions might be rounded up by the building of a realistic model of a mountain in which the successive zones of vegetation were indicated, bringing out comparisons between the influences of latitude and those of altitude.

When the building of such models is closely associated with the observation of characteristic natural features of the neighbourhood, and illustrated by pictures and graphic description, many opportunities arise for familiarizing the children with land masses and water forms. Ideas on the work of a river in shaping the land, and of the main features of its course through mountain, valley, and plain, may be gathered from a model in the geography garden or in a large sand-tray with hole for drainage. The more striking features of coastal indentation and of its significance arise out of the story of the life of a fishing people like the Eskimos, of life on a Norwegian fjord, or from pictures of an English fishing village or seaside resort.

Rough representations of a neighbouring hill will lead on naturally to the construction of contour maps.

Sand is a good medium for early efforts. Later on the sand will give place to clay or paper pulp.[1] There is no better means of giving children facility in reading such maps than that of allowing them to make them for

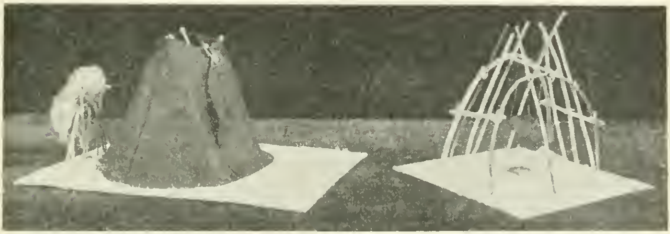


FIG. 95. A Lapp Tent.

FIG. 96. A Lapp Pulk.

themselves. In representing contours they should not only build up in relief, but also use colours corresponding to those used in making an ordinary orographical map.

[1] Paper pulp is made by tearing paper into tiny pieces, soaking it for about twelve hours, draining off superfluous water, beating to a pulp, adding a little adhesive material like size or whitening, and mixing to a convenient consistency.

FIG. 97. Relief Map of Oxford (Stage 1).

FIG. 98. Relief Map of Oxford (Stage 2).

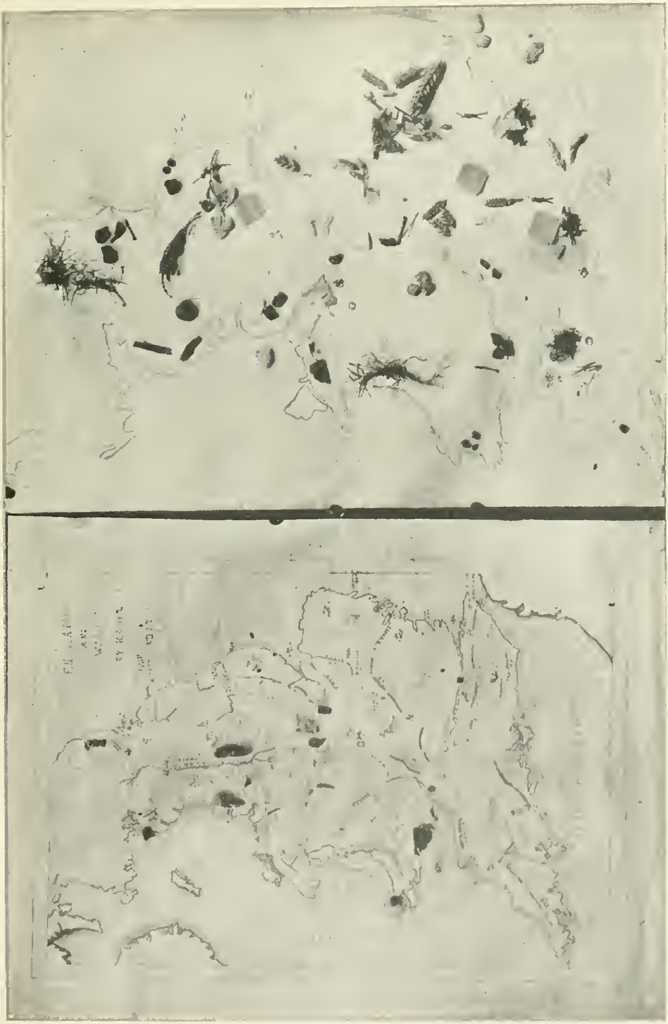


Fig. 99. The Productions of England.

Paper pulp is an excellent material for this purpose, so is a dough made from six parts of flour to one of salt. The map is made of the pulp or of the dough dried and painted in colours. Sometimes the several contours are indicated by a series of layers of coloured cardboard superimposed upon each other. The maps, Figs. 97 and 98, were made by a child from layers of cardboard, worked over with plasticine and painted in oil colours.

The making of a series of maps to illustrate various features, such as the distribution of rainfall, of vegetation, or of animal life, forms a good introduction or sequel to an oral lesson on the subject ; thus the effort of finding out and marking on the map the position of the coalfields of England is a good preparation for a lesson on the industries which have grown up around them. The observation of local wheatfields and the discussion of the conditions favourable to the growth of wheat may profitably be followed by an exercise in indicating and marking the actual and potential wheat-growing districts of the world. The maps on the previous page were done as homework by two girls in the Central Girls' School, Oxford.

Books of Reference

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Man in Many Lands, by L. W. Lyde.
Modern Geography, by M. J. Newbigin.
Influences of Geographic Control, by E. C. Semple.
General and Regional Geography for Students, by J. F. Unstead and E. G. R. Taylor.
The New Outlook Geography, Books I and II. Harrap.
A Rational Geography, Parts I, II and III, by E. Young.
Social Life of the Hebrews, by Rev. E. Day.
Early Hebrew Life, by J. Fenton.
Scripture Manners and Customs. S.P.C.K.
Things Seen in Japan, by Clive Holland.
Native Races of the British Empire.
Word Pictures from Cherry Blossom Land, by G. Palmer.
Japanese Girls and Women, by A. M. Bacon.

CHILDREN'S BOOKS.

Peeps at Many Lands, by John Finnemore.
The Little Cousin Series, by M. H. Wade.

CHAPTER XII

BASKETRY

Basketry in some form or other is practised by all primitive peoples, and is generally believed to be 'as old as the human race'.[1]

'The Ancient Welsh or Britons were expert basket-makers,' says Colonel James Jackson, 'and Roman annals tell us that the halls of wealthy Roman citizens were decorated with the beautiful and costly produce of their handwork. Our word basket has itself changed but little from the original, the Welsh "bas gawd" meaning literally a weaving or putting together of splinters.'

The first steps on the road towards basket-making may have been taken when primitive man twisted in and out the branches of trees to form a hiding-place or rude dwelling.

Many savages employ a kind of wattling or interlacing rods and branches of trees for the construction of their simple houses, of their weirs for trapping fishes, or of their fences for confining or catching animals or game. Even in our own country weaving is still employed in the making of fences.

The earliest vessels used by man were no doubt shells, horns, portions of gourds, nutshells, fruit skins, or any natural receptacle which came to hand. While carrying the water from place to place, the more progressive among primitive peoples would in course of time encircle the fragile gourd with a network of fibre, to protect it and to enable it to be more conveniently carried. Then, as George Wharton James suggests, 'It is easy to conceive how the breakage of a gourd,

[1] *Native Races of the British Empire.*

thus surrounded by a rude sustaining or carrying net, led to the independent use of the net after the removal of the broken pieces.' [1] This crude net may have been the forerunner of the basket.

Materials

The materials used by any primitive basket-making people vary with the region in which the basket is made. The sources from which such materials have been obtained are many, and include the animal, the vegetable, and the mineral kingdoms. Among the products of the animal kingdom may be mentioned the skins and sinews of animals, the feathers of birds, and the quills of the porcupine. The root, the stem, the bark, the leaves, the fruit, and the seeds of trees and plants are employed, while gums are used for rendering the basket watertight. The fibres obtained from the roots of the spruce-tree are used in the spruce-growing regions of the Arctic Circle, and beyond the tree-growing zone strips of the skins of animals are woven into baskets and bags. Within the tropics the split leaves of many of the palm-trees afford excellent materials for basket-making.

Strips of bamboo are used in Siam, thin strips of wood in Norway and Sweden, while the long thin twigs of the willow are more generally used than the branches of any other tree.

The bast or inner bark of trees is much used in hot countries, where trees grow much more rapidly than in temperate regions.

Many grasses, sedges, and rushes make excellent basket-making material. Since the materials used in basket-making are so varied and diverse, we ought not to restrict children to the use of one or two media. The educational value of basketry to young children will be much increased if they are encouraged to use any suitable materials that are near at hand. Among

[1] Quoted by G. Wharton James in *Indian Basketry*, p. 13.

such may be mentioned the twigs of the hazel and the willow, and many kinds of grasses (including hay and straw).

The most suitable prepared materials seem to be raffia or bast and cane or rattan.

Raffia or bast. Among prepared material suitable for the use of little children raffia seems to rank first. It is obtained from the inner portion of the leaf of a Madagascar palm. The leaves of this palm are more than 50 feet in length, and they are prepared for use by removing the epidermis from both sides.

Rattan or cane. This is not so soft and so easily handled as raffia, and it requires soaking in water before it can be used. While not so suitable as bast for a weaving material for the work of very young children, it may with advantage be used by children of about eight years of age. It may often be used with raffia to give a greater firmness and rigidity to the work. This cane is obtained from a palm grown in the forests of the East Indies. It is prepared for exportation by being split into long strips of round and flat cane. The sizes vary from 00, the finest, to about 16, the coarsest. The most useful sizes for young children are Nos. 2, 3, and 4.

Materials gathered locally. It is often possible to encourage the children to gather materials for this work. Some may be used green, but others should be stored for use in seasons when they cannot be gathered. Rushes and willow twigs may be gathered in most country districts.

The writer remembers the experience gained by a class of children of about seven years who used some fresh willow which was gathered when young and pliable, and again later when the sap had hardened and the wood become brittle. The natural search for causes resulted in a lesson based on practical experience.

Among the earliest purposes to which the basketmaker's art was applied has been mentioned the construction of traps to aid man in the capture of animals.

The fundamental function of the basket is of course that of a receptacle, and in early times it appears to have been used as a vessel in which the necessaries of life could be conveyed from place to place or stored in the simple home. When man began to cook his food his first vessel was the watertight bucket, in which the water was heated by dropping into it red-hot stones.

In the first kitchens it did duty as a mixing-bowl for the preparation of food, and as a dish for serving it. In early times the basket-maker was called upon to construct many objects needed in the home, and as social life developed, basketry was still a prominent feature in the evolution of industries. It has played an important part in the history of the architect, the miller, the potter, the cabinet-maker, the shoe- or sandal-maker, the weaver, and, as Otis T. Mason says, 'The head still claims the basket-weaver's art the world over.'

The baskets made by the American Indians are not only extremely beautiful, but a study of them brings us into contact with the history of the life of these people.

George Wharton James says: 'To the uninitiated a fine Indian basket may possess a few exterior attractions, such as shapely form, delicate colour, and harmonious design, but anything further he cannot see. On the other hand the initiated sees a work of love; a striving after the ideal; a reverent propitiation of supernatural powers, good or evil; a nation's art expression, and a people's inner life of poetry, art, religion. . . . Fine baskets, to the older Indian women, were their poems, their painting, their sculpture, their cathedral, their music.'[1]

Basketry as a form of School Handwork

Since even the Philistine cannot fail to admire the simplicity and beauty of form, colour, and design, it seems that work done direct from nature as was that

[1] *Indian Basketry*, p. 16.

of the Indian, and undertaken in a similar spirit, can scarcely fail to have a good educational effect, even as a mere training in form and colour, and as a means of applying simple designs.

As George W. James says, 'The ethnologist finds in the progressive steps of the manufacture of baskets a preparatory training for pottery, weaving, and other primitive arts.'[1]

Since basketry is the 'Mother of pottery, weaving, and other primitive arts', the intelligent teaching of some of its more fundamental elementary principles will help the child to understand much that he will see around him. It is probable that the shortness of children's school life and the multitude of subjects claiming attention will militate against its general introduction, but a knowledge of the stitches and weaves will be found useful even in the ordinary school routine. Some of the simple stitches make a good introduction to needlework, and through their medium toys for the doll's house may be constructed.

Some knowledge of the technique of basketry will help the children to make models of primitive dwellings, and more fully to understand and appreciate work seen in ethnographical collections. Apart from the aesthetic value of the work, the construction of tiny models of an Indian baby-basket, of the various carrying baskets used by aborigines, of their water-bottles, their boiling baskets, or their primitive implements will help to develop in children the constructive imagination necessary to understand the conditions of their life. Many concrete ideas as to the climatic conditions, the character of the soil, the vegetation, and the life of the people, may be obtained by means of simple inferences drawn from the objects made by the natives of various countries, and thus geography may become a live subject, full of interest to the child.

Teaching of stitches. These may be taught to a large class by means of the demonstration method. The

[1] *Indian Basketry*, p. 13.

teacher, provided with a piece of basketry constructed on a scale sufficiently large to be seen by all the children in the class, should work the stitch in front of them, and also draw it boldly on the blackboard. By giving a representation of the stitch on the blackboard the child will gradually become accustomed to associate the drawing with the actual work he is doing, and this will help him in the making and interpretation of drawings, and so prepare for the more formal stages of handwork. As the children's power of imitation is great, many of them will soon be able to do the stitch. If thought advisable, the quicker pupils might occasionally help by teaching the slower ones, who will need individual attention. As soon as the stitch is mastered, the children should be allowed to apply it in some kind of free work, or they might be encouraged to work from a simple model.

The child must not be kept any longer than is necessary in the early imitative stages. There should be definite advance, constant introduction of variety, and abundant scope given to express himself and to develop his own ideas.

His knowledge and appreciation of form should be developed by showing him as many simple and beautifully shaped objects as possible, and requiring him to suggest and to design forms suitable for the construction of his models. These might be criticized and compared with simple art forms, and by such wise suggestion the child may be guided and encouraged to love beauty of form. We must, however, beware of over-guidance; within certain limits, the child must be left free to realize himself in his own way. Development must come from within. It can only be hindered by arbitrary outside interference.

Knotting

This is valuable as a preparation for other forms of handwork. It is a good exercise in spacing and count-

ing, but should not be continued for long. Small objects, such as a doll's hammock, bags of various shapes, may be made by the children.

The first knot may be a simple loop, later the weaver's knot should be learnt, for it will be very useful in joining the threads in weaving exercises, or in any of the later work.

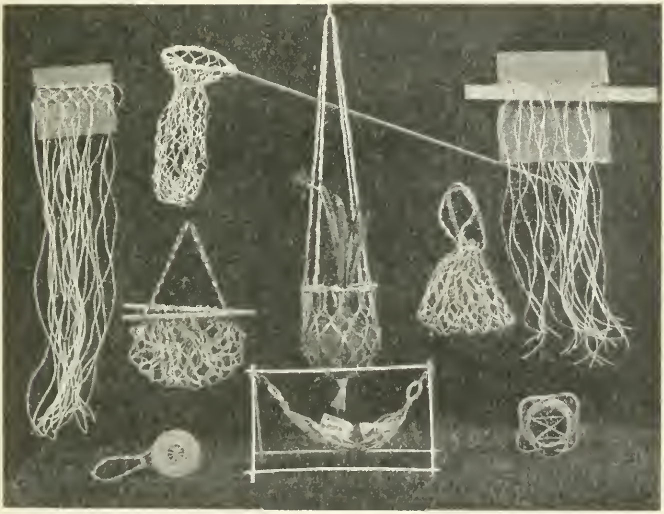

Fig. 100. Knotting.

If time permits, the regular netting stitch will be found useful.

While studying primitive life, fishing-nets might be made and used by the children.

All exercises worked by little children should be very simple, and be such as can be quickly finished. It follows that they will usually be of a slight and impermanent character.

Rolling or Coiling

1. *The circle.* When large rushes can be gathered near the school or during a school walk, the children may be shown how to roll them into a coil. When secured with a pin this coil will serve many purposes, and the child will not be slow in suggesting them. In turn it will do duty as a wheel, a mat, a plate, &c. While making these flat coils, some one is sure to push up the centre, when another series of objects is suggested. One will call the new shape a hat, another will poise

Fig. 101. Rolling and Coiling (1).

it on her little finger and call attention to her dolly's sunshade or umbrella. Ingenuity will suggest turning this dome-shaped form upside down, when it will serve to the interested child for a saucer, a basket, a dish, &c.

The hat in Fig. 101 was made by placing the finger under the centre of the coil, and gently pushing it upwards. The coil was then taken in both hands and moulded into shape. Then the trimming of grass flowers was added.

At the base of most of the rushes was seen a white portion of a few inches in length. The observation of this offered a good starting-point for setting the children to notice and experiment with growing plants; the

reason for this absence of green colour was not discovered for some time. This white part was turned up, and the rest of the rush firmly coiled around it. This at once suggested a candle or a candlestick to the delighted children, who were eager to experiment for themselves. The candlestick in Fig. 101 was the result of the child's attempt, and was the work of a child only just five years of age.

Free play with the rush gave a number of tiny cups and saucers, baskets, &c. One of the baskets may be seen in Fig. 101.

Fig. 102. Rolling and Coiling (2).

2. *The oval.* This form was first made accidentally by some of the children, and all the class was then shown how to fold a portion of the rush back on itself. The boats in Fig. 102 were made from this oval. The funnel of the steamer was formed by turning up the end, as for the candle.

The little ark in Chapter X, Fig. 82, was also made by coiling an oval as above.

Coiling and Weaving combined

The sail for the sailing-boat was woven with raffia on thin twigs of willow; the oars for the rowing-boat were also made of twigs of willow, which were interwoven with fine rush.

Twigs of willow were introduced, and the children allowed to experiment, the teacher at the same time constructing simple dolls' furniture. The chairs, table,

Fig. 103 Coiling and Weaving combined.

Fig. 104. Coiling and Weaving combined. A Cradle.

and sofa seen in Fig. 103 were made by pushing twigs of willow into the coil of rush, and then interlacing with another rush. The furniture was made by children of about five years of age.

The children were now ready to make something more permanent. After the rush had been coiled into

an oval, a thread of green raffia was given to them. Many of them managed to fasten the rushes together very roughly. The cradle shows one of these crude attempts after the addition of willows and rushes for the head part.

It was found that the method naturally adopted by the children in this crude sewing was very similar to that by which aborigines and primitive peoples first joined together such material.

FIG. 105. Plaiting and Winding.

Winding. This is another exercise which may be regarded as a preparation for simple weaving and basketry. Balls may be made of odds and ends of wool by winding them around a hollow ring, but this exercise should not be continued long, or it becomes very mechanical.

Many objects may be made of cardboard and raffia which has been previously damped with water and pressed flat with thumb and finger. The easiest exercises consist in winding raffia round rings of cardboard, cut from a cardboard tube or made by stitching strips of cardboard into rings. It is generally neces-

sary to wind twice round the ring before it is completely covered, and the children seem to find it easier to cover the ring by so doing than by trying to do so by wrapping once round. Serviette rings, curtain rings, and many other objects may be made.

The illustrations shown in Fig. 105 include a drum, a tiny basket, and a pair of curtain rings made of cylindrical pieces of cardboard covered by winding raffia. The ends of the drum were covered by stretching and pasting circular jam-covers over them. A plait of raffia was fixed by means of a few stitches on the junction of the raffia and the parchment. The drum was finished by threading in a coarse piece of dark wool.

The bottom of the tiny basket was sewn in by buttonholing over a circular piece of cardboard of suitable size. The handle consists of a plait of raffia, and the decoration on each side of the handle of little bunches of very fine raffia.

The curtain rings were finished by weaving in three rows of raffia, and adding a cord made of plaited raffia.

Wrapped Weaving or Winding over Cane

This exercise has been found very suitable for young children of five or six years. They are first taught by demonstration how to wind around two pieces of cane or willow crossed in the centre. The crosses are secured with a tiny piece of wire, which can be taken away after the winding is completed. When the children have made the square they are expected to exercise their ingenuity in constructing from it any simple object which their fancy suggests. Stools, chairs, and tables are the most frequently made. The next stage is the winding around three sticks joined in the centre. As the work proceeds the children find that this gives them a six-sided or hexagonal figure. The octagon or eight-sided figure is made from four pieces joined in the centre. Pentagonal, heptagonal, and other figures containing

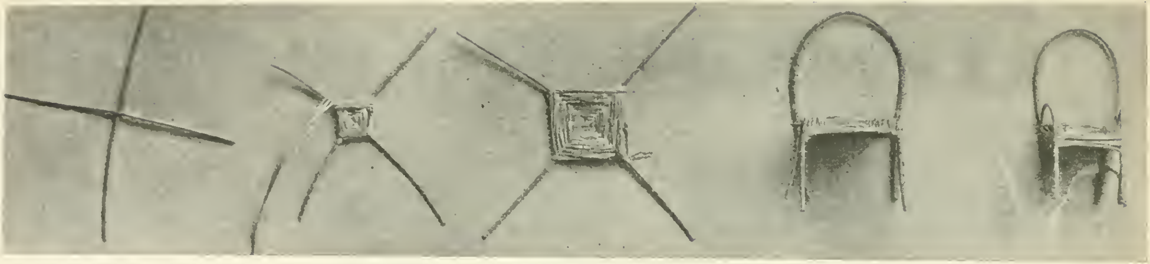

FIG. 106. Making a Chair.

FIG. 107. Dolls' Furniture.

an odd number of sides are constructed by fastening the spokes to a centre, which may be made of a small cork. Through the medium of such exercises much incidental knowledge of form is gained.

The furniture seen in Fig. 107 was made by children of five or six years. This method seems to be very

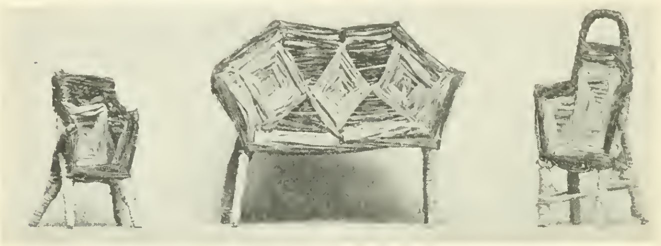

FIG. 108. Chairs and Sofa.

FIG. 109. Homework.

suitable for making bedroom chairs for the doll's house.

The chairs and sofa seen in Fig. 108 were designed and made by children of six years. Now and then the co-operation of a fellow pupil or the aid of the teacher was needed. Thus the child's tiny hands were sometimes unequal to the task of holding the work while

some of the final ties were being made. On such occasions the help of a neighbour was obtained. The little Japanese table, the chair made from wood and raffia, and the rattle shown in Fig. 109 were made at home by a child of six years. She probably enlisted the help of her father, but the ideas and the design were certainly her own, as they show a modification of work done in school.

The seat of the chair and the flat part of the table were made by winding around two sticks, as in Fig. 106. Long pieces of cane were left to form the legs of the table.

The rattle was made by joining four sticks in the centre and winding around them as in Fig. 106. When the required size was reached the spokes were bent until they could all be held together, the lower part of the weaving was completed, and a tiny sleigh bell placed inside. The rattle was finished by winding around all the spokes as they were held in the hand.

Basketry may be divided into two classes of work: (*a*) sewn, and (*b*) woven basketry.

Sewn Basketry

The chief difficulty experienced in the early stages of this work is that of beginning any article it is proposed to make, and it seems doubtful whether the making of little baskets in this work should be undertaken much before the age of seven years. It is sometimes easier to make a beginning with such an object as a frame for a photograph or little picture, because the child can wind a double coil of cane into a ring and then work in this ring as a foundation. Most of the sewn baskets are worked over a coil of raffia, hay, straw, cane, or other substance. If raffia or any other material in short lengths is used for the foundation coil, the difficulty of the constant replenishing of the material is presented to the child. As a long length of cane can be taken, it is easier for the child to begin by using cane for the

foundation, when he has only to grapple with the difficulty of the stitch and of shaping the work to the desired forms.

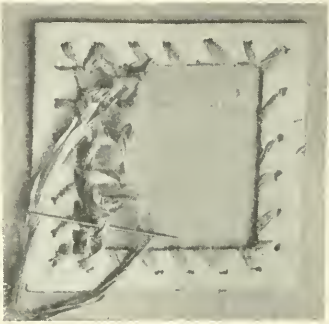

Fig. 110. Simple Interlocking Network Stitch

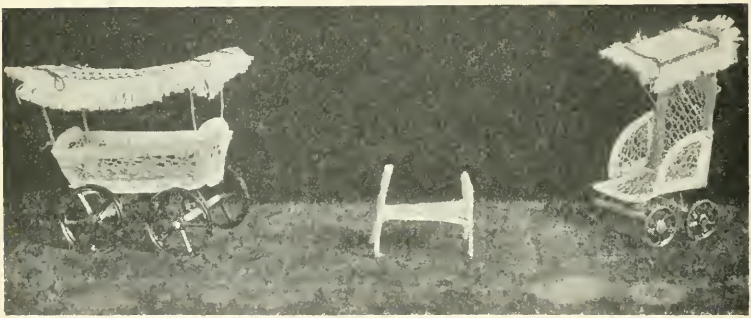

Fig. 111. Dolls' Perambulators and Bed.

Stitches

1. *Simple interlocking network stitch,* as seen in the perambulator and mail-cart of Figs. 110 and 111.

2. The *simple interlocking coil stitch.* This may be worked over a foundation of hay, straw, grass, or

raffia. The illustration (Fig. 113) shows the results of work done by children of six years, while a farm was being studied. The foundation coil was made of hay

Fig. 112. Simple Interlocking Coil Stitch.

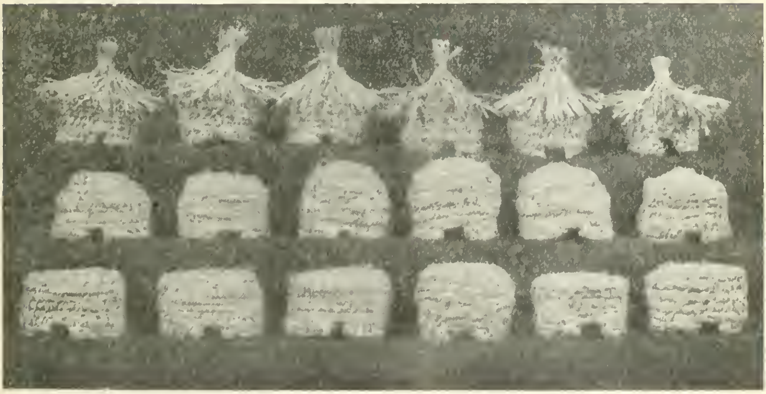

Fig. 113. Straw Skeps.

or of raffia. Each child tried to make a straw skep. A beginning was made by winding the end of a thread of raffia round the coil, curving it, and then sewing round and round the tiny centre. The first work was

very rough, as the children were not worried much about the stitch if they managed approximately to get the shape.

3. *Long and short stitch*, sometimes called 'lazy squaw' stitch. The thread is twisted round the coil as many times as is desired, and the needle then put between two coils. In the figure the thread of raffia is only twisted once around the coil. This is one of the easiest and most satisfactory stitches, and, by varying

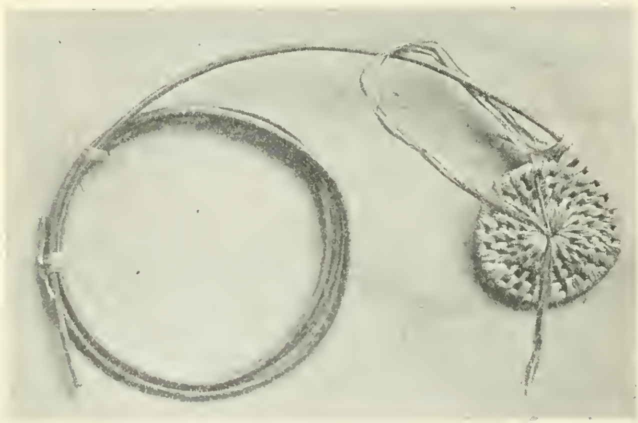

Fig. 114. Long and Short Stitch.

the number of times the thread is wound around the coil, many patterns may be made and different effects produced.

4. *Half-hitch or blanket stitch*. This is useful for finishing off such an article as the doll's tam-o'-shanter, or the border of the frame seen in Fig. 119. String balls may be made by cutting up pieces of cork to form the centre, winding knitting-cotton around, and making an outside covering with the half-hitch or blanket stitch in fairly stout string. These may be used by young children for playing cricket.

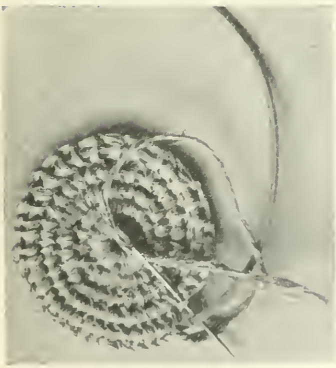

FIG. 115. Half-hitch or Blanket Stitch.

FIG. 116. Ray Stitch.

FIG. 117. Figure Eight Stitch.

FIG. 118. Lace Stitch.

5. *Ray stitch.* The stitches radiate from the centre, and merely interlock without passing round the foundation coil as in 'lazy squaw', 'figure 8', and most of the other stitches.

6. '*Figure eight*' *stitch* (see Fig. 117).

7. *Lace stitch* (see Fig. 118).

Application of Basketry to Toy-making

Little children of six and seven years can get accustomed to the stitches and mode of working by making tiny baskets and toys.

Most of the toys shown in Fig. 119 were made by a small class of children under the leadership of a pupil-teacher. They learnt a stitch in one lesson, and in the next they proceeded to make something. The first exercises were worked on a ring like that in Fig. 120.

At first they worked from a model prepared by the teacher. The tiny frames and hand-mirrors were among the first objects they made, and the makers experienced much joy in their construction. These objects were, however, the choice of the young teacher, and are obviously such as suggest themselves to budding girlhood rather than to infants.

The Picture-frame. The teacher's model was shown to the children, who were asked to suggest how it was made. They decided that it must be begun by making a small ring for a starting-point. Tiny pictures of the late King Edward and of Queen Alexandra were provided as a guide for the size. In making picture-frames it would be well to let the children bring a tiny picture or photograph to frame. We must do all that we can to keep the work purposeful, and to help the child to feel the joy of making a useful thing.

About three lessons sufficed for the making of the rings. The work was then fastened off. The next step consisted of working the border. The border of the teacher's model was not quite like that of any of the little frames shown in the figure. It was square,

with a point over the top. The children were given to understand that each one was expected to design a border for the completion of his own work, and

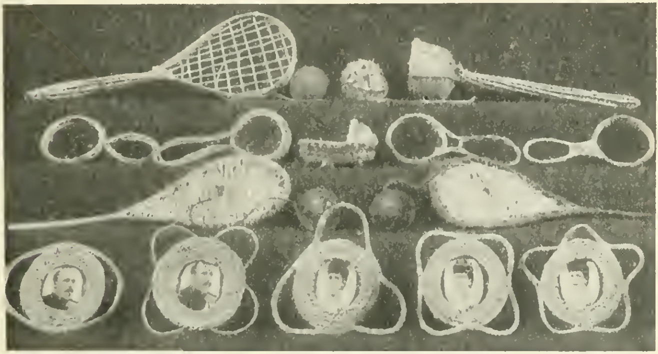

Fig. 119. Objects made by Young Children.

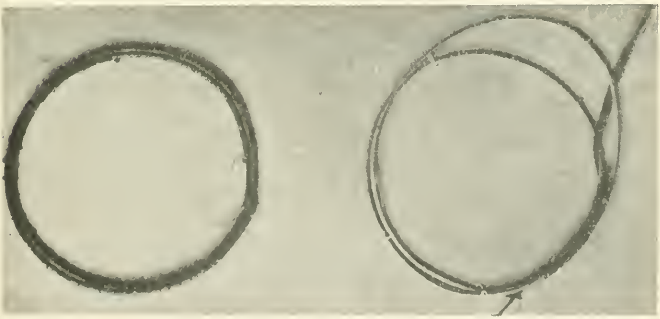

Fig. 120. Making a Raffia Ring.

a piece of cane was supplied with which they were invited to experiment. Drawings were then made. Some of the results are shown in Fig. 119. A frame with a hexagonal border made by a child would not stand very well, and is not included. The children

were shown how to begin by attaching the cane to the frame, and then to work half-hitch or blanket stitch around the piece of cane until the next place of attachment was reached.

The model was again consulted for the method of backing. Children were asked to suggest methods, but eventually the teacher's model was copied :

(*a*) horizontally, making two sides of a square ; and

(*b*) obliquely, to form diagonals.

The stand was made from a piece of cane that had been soaked, bent into a curve, and stretched to the frame just above the centre.

Hand-mirror. This was also framed from a model prepared by the teacher. It was discussed as before. The children were delighted to see themselves in it. They suggested that a ring should be made as a beginning, around which they sewed until it was as large as the tiny mirror, which had been purchased for 1*d*., and used to make 'Light-Birds' or 'Jack-a-Dandies'.

The mirror was then put on the worked ring, tied round with a piece of string, and a piece of cane placed inside it to form a frame for the mirror, and also a means of holding it in place.

The children were expected to design their own handles, all of which showed some little difference from that made by the teacher.

The cradle was designed by a child of six, and is an example of the child's choice.

The '*pat-balls*' seen in the third row of Fig. 105 were made from pieces of flat cane woven with raffia. Two pieces of flat cane about 24 inches long were tied together. They were doubled, and the four ends wound round with raffia for about 6 inches to form the handle. The top part was then allowed to bow out, and a winding of raffia passed around the bow. This was to provide a firm foundation, to which could be attached the warp and woof. The rough weaving was then done. The model was finished by sewing around the edge and winding the handle with

coloured raffia ; care must be taken to attach the end of raffia firmly by running it in. Soft wool balls were fastened by a piece of string to the centre of the lower part.

The 'pat-ball' seen at the top of Fig. 119 was a more successful model. It was begun by winding around the centre of two strips of cane 12 inches long. Three other pieces of cane were sewn to this by 'lazy squaw' stitch. A piece of wood (a tiny drumstick) was next tied to the edges of the pieces of cane sewn together. The ten pieces of cane encircled the stick, and were sewn over with raffia.

The *cup and ball* shown on the top row of Fig. 119 was made from a tiny raffia basket, a stick surrounded by pieces of cane, as in the *pat-ball*, and a ball made by passing strands of cane over some pieces of cork, covered with wadding and wound round with knitting-cotton. The ball was sewn over like the handles of the cup and ball and the pat-ball.

When the children were set to design their own models, the favourites seemed to be some kind of cart. The little vehicles in Fig. 121 show some of the results. The making of the wheels is always a difficult matter, and in the illustration may be seen several methods that were attempted.

The little '*push-cart*' (No. 5 in bottom row) is merely a piece of cardboard into which some pieces of cane have been stuck at both ends. The wheels are made of pieces of cork.

In No. 4 (bottom row) the base also consists of cardboard into which pieces of cane were stuck. These were wrapped with raffia after a method originated by the child. The loose ends were then fastened on to each other by means of a kind of buttonhole or slip stitch.

Nos. 3 and 5 (top row) are made by winding raffia over a cane foundation, and were designed by children of about six and a half years.

No. 1 (top row) is also a child's design.

The wheels in Nos. 1, 3, and 5 are made by winding

FIG. 121. Doll's Perambulators and Push-carts

raffia around a circle of cardboard with a hole in the centre. The wheels in Nos. 4 and 6 are made of sewn circles in 'lazy squaw' stitch. Those in 1 and 2 (bottom row) are made by winding raffia around some of the rings of Froebel's Gift. The wheels of the perambulator (No. 3, bottom row) were made by winding around some

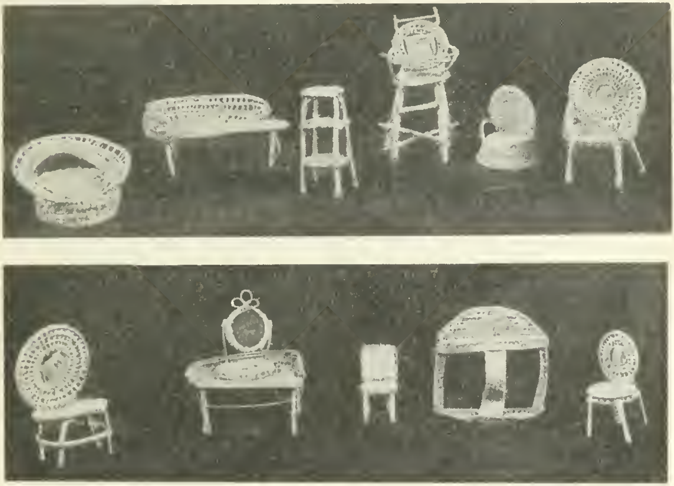

FIG. 122. Furniture for Doll's House.

wheels made of metal, and bought on a card for 1*d*. Many of the wheels are kept on by means of bits of quill.

The doll's furniture in Fig. 122 consists mainly of attempts and experiments made by young teachers. As the closer stitches take so much time, and the beginning seems so difficult for young children, an attempt was made to form the centre of the wrapped cane as in Fig. 107, and to continue by means of lace stitch. This method is employed in the back and seats of Nos. 4 and 6 of Fig. 122 (top row), and Nos. 1 and 5 (bottom row).

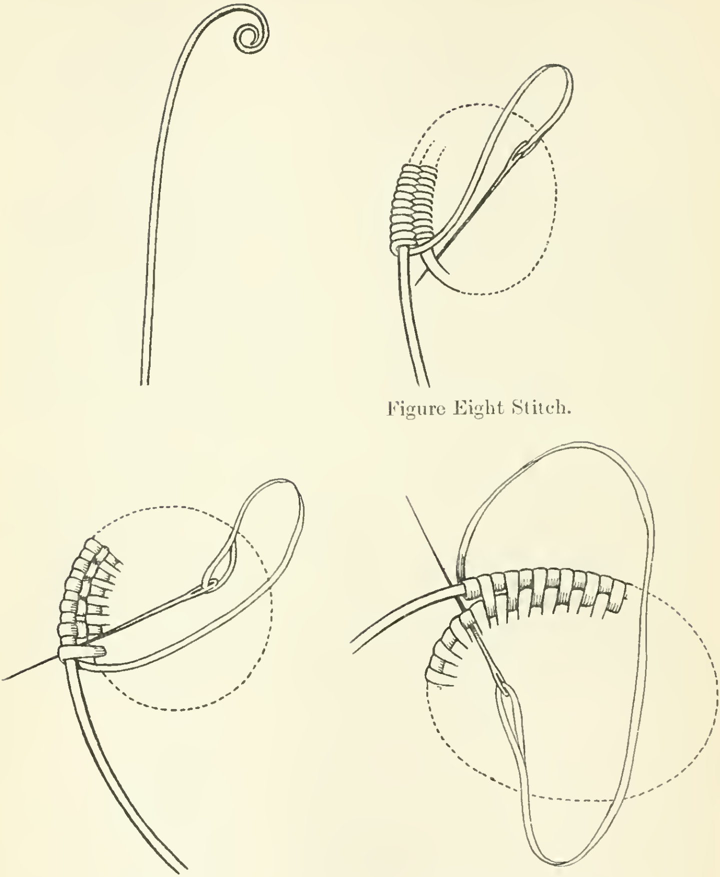

Figure Eight Stitch.

Lace Stitch.

Long and Short Stitch.

Fig. 123.

The back and seat in No. 3, Fig. 121, were made by winding and weaving over tiny pieces of cardboard.

Nos. 1 and 5 of Fig. 122 are made entirely in lace stitch.

No. 5 (top row), Fig. 121, is similar to a model made by the children of Leyland School. No. 1 of this row was designed by a child, and was originally intended for a 'push-cart'.

Speaking generally, the legs are made of very firm cane wound with raffia. It will be found easier to make them of two pieces and to sew the centre of the wound portion to the seat of the chair or sofa.

This method presents many difficulties to little ones, and Miss Thwaites's method of attaching a back to an inverted basket is much firmer and more satisfactory.[1]

Beginning Sewn Baskets

A piece of cane is taken and soaked; about three-quarters of an inch at the end is shaved down, as shown in Fig. 123. This end is twisted around the finger or around a pencil to make it curve readily. It is then made into a tiny loop. A needleful of raffia is taken and wound six or eight times round the loop by passing the needle in and out as in the drawing. The loop is then tightened, and the second row of the coil is worked in the stitch desired.

Oval baskets are begun as in Fig. 124.

How to join raffia. When only about a quarter of a yard is left of the strand of raffia in the needle, a new piece should be taken and laid on the top of the cane forming the foundation coil. The work is then continued for about six stitches, sewing in the raffia but leaving the end projecting a little way. The new piece of raffia is then taken up, pulled until it disappears, after which the needle is threaded anew with it. The old thread is laid on the cane, worked in the coil for a few stitches, and thus made secure, after which the end may be cut off.

How to join the cane forming the foundation. To make the size of the coil uniform, about half the thickness of the cane may be shaved away for about three-

[1] See *Coiled Basketry*, by Miss Mildred Swannell.

quarters of an inch at each end. The two ends may thus be fitted together.

Introduction of colour. Colour may be introduced in many ways.

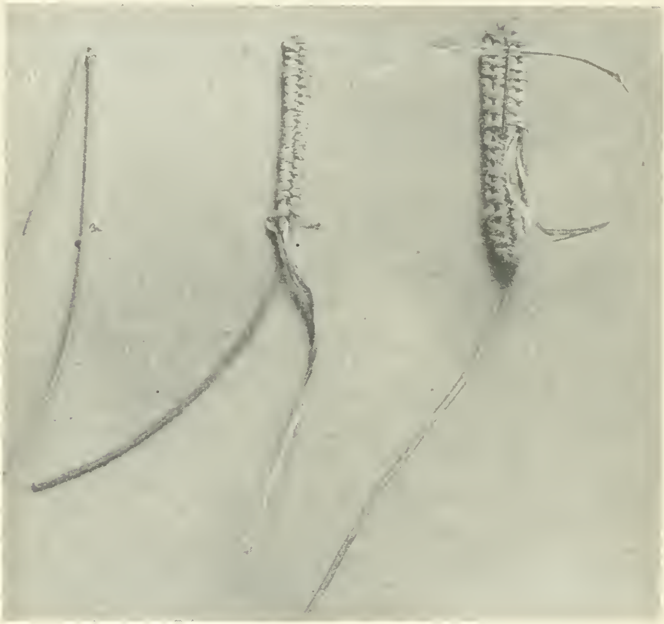

FIG. 124. Beginning an Oval Basket.

1. The stitches may be of a contrasting colour to the coil, such as in the illustration of ray stitch (Fig. 125).

2. Borders of different colours may be worked, as in the cradle and many of the toys and baskets.

3. Lines of contrasting colour may be introduced. When this is done it is generally better not to have all the joins immediately over each other, as the broken line is more pleasing to the eye.

4. The centre may be of one colour, then rows of another may be worked, after which squares or rectangles may be introduced as in Fig. 125.

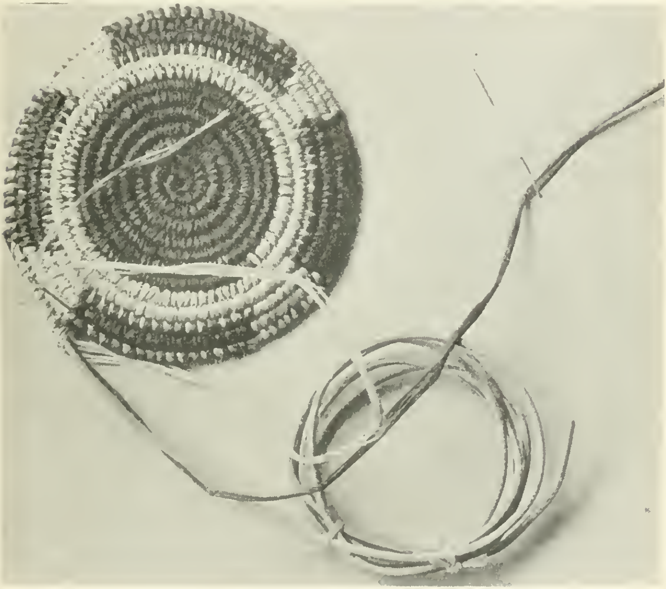

Fig. 125. Working in Two Colours.

The rectangle of colour is worked, then the coloured raffia is carried along under the natural colour, and thus hidden, reappearing when the next patch of colour is reached.

Forms of Baskets

The first stage in the making of sewn baskets will probably be an attempt to construct flat circular mats. Most beginners fail to keep the mat flat, and the result is a shallow concave vessel similar to the early work of primitive woman, and such as we still find in use as

a food plate or a mixing dish among the American Indians.[1] From this shallow vessel a bowl may be made by raising the sides. The hemispherical bowl easily develops into the various kinds of pot such as was once used for cooking. Jar and cone-shaped forms evolve naturally by flattening the base of the globular vessel and shaping the sides.

A variety of method may be employed in approaching the work with young children of seven or eight years old. Thus we may begin with:

1. *Experimental* work. The children are taught the stitch, and left quite free to make a tiny basket of any shape they please. Then the results are noted. In most cases the forms obtained will be accidental, as the child has not yet got a complete mastery over the material. By his experience and a discussion of the results the child will feel the need of a more definite plan.

2. *Copying forms.* Various forms, suitable and unsuitable, for employment in making baskets may be drawn on the blackboard. The development of the hemispherical bowl, the globular pot, the cylindrical jar, and of cone-shaped and truncated cone-shaped forms may be shown. Little by little the children will see that the hemisphere, the sphere, the cylinder, the cube, and the cone form the basis of most simple useful shapes.

A taste for simple form may be cultivated as the child is led to see that simplicity and usefulness often result in beautiful forms. As the child tries to copy some definite form it is probable that many modifications and alterations of the shape will occur during his work.

Gradually, however, he will be led not only to work from a definite form after a definite plan, but he will also

3. *Make his own design.* The form the child wishes

[1] *Aboriginal American Basketry*, by O. T. Mason (Smithsonian Report, 1902).

to reproduce may first be cut out in paper. Before a form is constructed the purpose for which it is intended should be determined. Both sides should be made alike by doubling. Satisfactory forms should be traced on cardboard, cut out, and used as a means of gauging the work.

Fig. 126. Pattern in Long and Short Stitch.

Fig. 126 shows an example of a star design worked in long and short stitch. It will be seen that the pattern depends on the number of times the thread is wound round the coil between the stitch.

Woven Baskets

These may be made from cane in various sizes, but for little children it will be found easier to have the warp strands of cane (flat or round), or of pieces of thin wood, and the weft of raffia. When the baskets

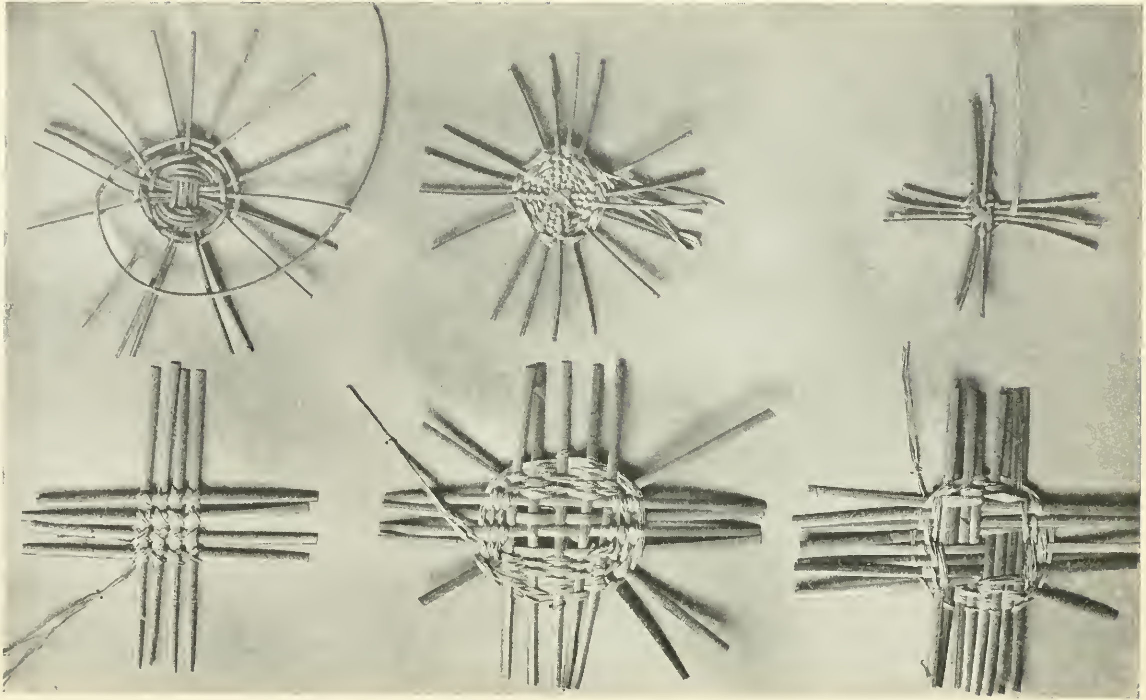

Fig. 127. Centres for Baskets.

are constructed entirely of cane it will be found advisable to use a coarse cane for the warp and a finer for the interlacing, or weft. Chip, straw plait, and many other materials may be introduced for the sake of giving variety to the work.

Centres. Some suggestions for centres may be seen in the illustration (Fig. 128).

Lesson on form. A number of baskets in a variety of simple shapes were shown to the children, who noticed the differences in form. Then two simple shapes in strong contrast with each other were chosen.

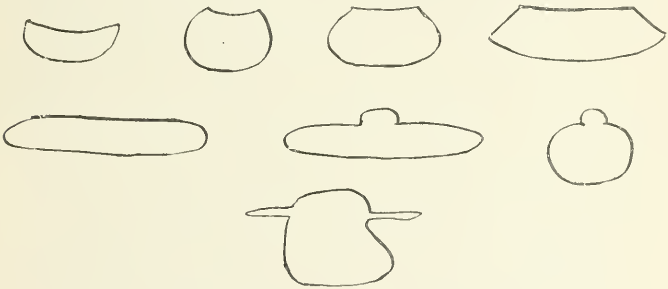

Fig. 128. Shapes drawn by Children.

The details of differences were noted by the children. The use and pleasing effect were noted.

As a preparation for cutting out the shapes of baskets the blackboard was put in the sun so that children could note the shadows cast by such objects as a square Gift III box, an oblong box, a hand, and finally a basket.

The silhouettes were explained as old-time photographs, and the method of drawing round the shadow was shown.

A few simple baskets were distributed among the children, who were invited to cut them out as they took a view of one of the sides.

The results showed that the children exaggerated the detail which impressed them most. In some cases

it was the lid, in others the sides, in others the body of the basket, and in others the knob on the lid.

Permission to cut any shape they chose gave some interesting results.

Simple baskets were again given, and cut out by the children, who were invited to draw on them patterns in crayons.

Then the children cut out any shape they chose, and put their own pattern on it.

Original basket-shapes and patterns were made.

Decoration through Colour and Design

The child's love for colour is so great that it should be satisfied by introducing it into the work. As far as possible choice of colour should be allowed. The raffia should be dyed at the school, since the coloured raffia obtainable at a low price is not only expensive, but often crudely coloured. The children can stain some by means of rubbing on petals of flowers, but for the permanent work, green or brown walnut dyes can be made by using coffee, tea leaves, bark of such trees as oak, alder, or birch, and the petals.

Some attempt to form design should be made as soon as the children have mastered the stitch and can manage to shape a simple form. Rows or bands of colour may be worked. Squares and rectangles may be introduced rhythmically, leaving sufficient space between. The rhomboid and the triangle will be found suitable for basketry designs. The children can invent simple suitable patterns by the use of Gift VII tablets and squared paper. Such patterns generally consist of a succession of units, which have a meaning for the child.

The beauty of the Indian woman's baskets has already been referred to. There is no doubt that at one time the designs she wove in so skilfully were reproductions of familiar sights, although such have often become so conventionalized as to be reduced to

mere symbols. Thus the running water, the mountains, the rainbow, the lightning, the sun, the moon, and the stars, and the forms of birds, fishes, animals, and man, all entered into the magic web of the baskets made by primitive woman. As Anna Bell says:

> All the high and low
> Of my wild life in these wild stems I snare,
> The jagged lightning and the star I show,
> The spider and the trailing snake are there.

Stories of the Indian woman, and opportunity to see and study some of her handwork, will be full of stimulus and suggestion to the child.

Construction of Designs

These may be designed on chequered paper by children, and afterwards introduced into their work.

An original pattern made by a child of nine years for 'long and short' stitch is shown in Fig. 129.

Making designs. The tablets of Gift VII give an admirable material for first practice in making elementary designs. The children of Leyland School practised with these while working in 'long and short' stitch, and in 'figure eight' stitch.

After simple designs had been made with the tablets they were drawn on squared paper.

Many ideas as to the arrangement of colour were gained during this work. Thus one child wished to work in yellow. The effect of placing yellow next to the yellowish natural raffia was tried, and the need of outlining colours so similar in tone with a darker colour was shown. Lines of patterns were worked out on the squares. From these, squares of colour alternating with spaces in the natural shade were developed.

The next lesson developed squares touching each other at the corners, as in design.

From the laying of tablets so that the point is in the centre and the sides make an angle of 45°, a pattern in diamonds or rhomboids was developed.

The rhomboids were in alternate blue and red colours.

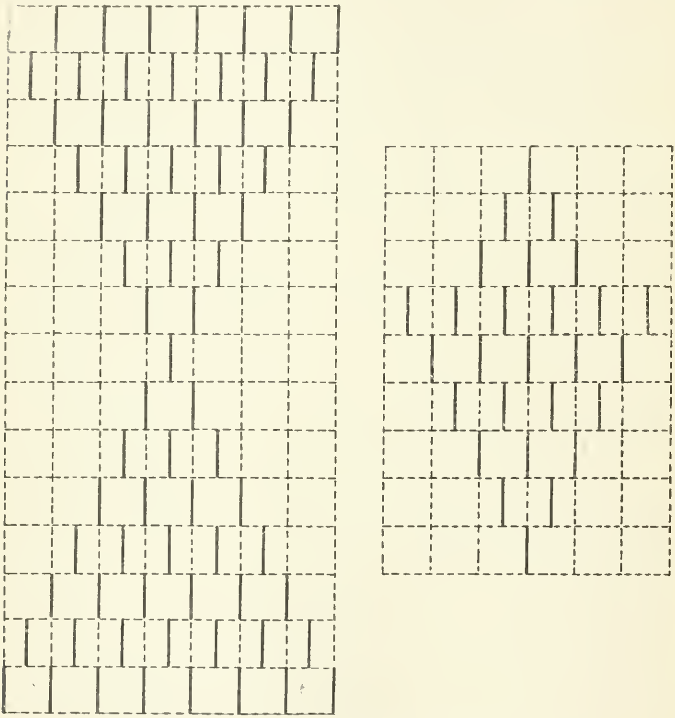

FIG. 129. Designs for Long and Short Work.

Next rhomboids in which the four centre lines were of a contrasting colour were worked, and lastly the outline only of the rhomboid.

Designs for 'figure eight' stitch. The method of procedure for the making of patterns for this stitch

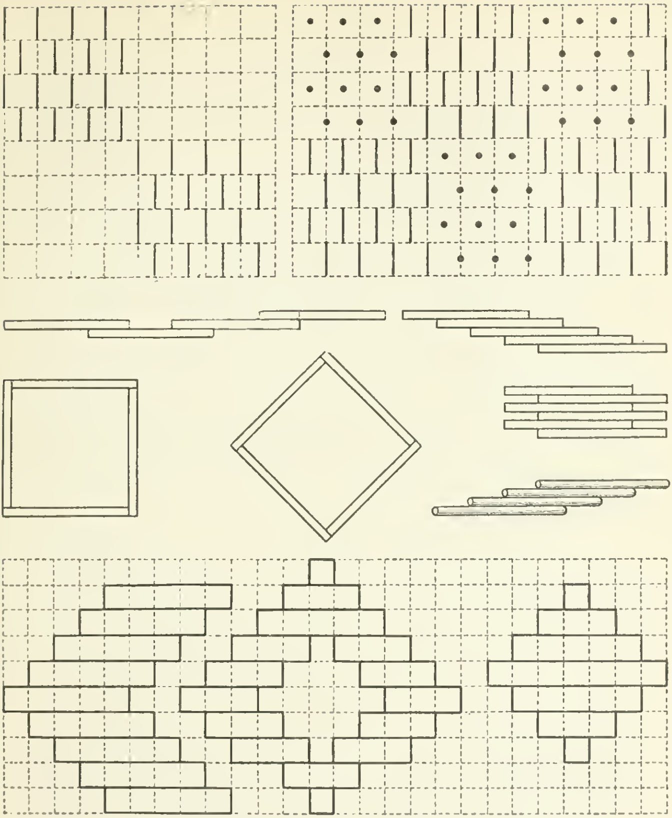

Fig. 130. Designs for 'Figure Eight' Stitch.

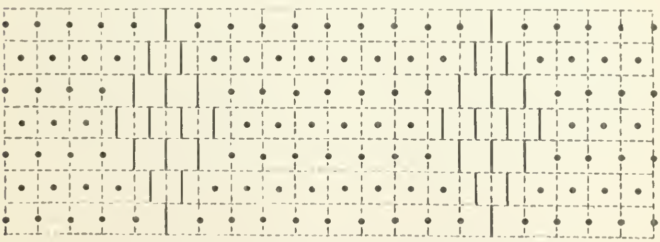

Fig. 130a. Design for 'Figure Eight' Stitch.

1

2

3

Fig. 131. Baskets made by Children in Leyland School.

1

2

3

Fig. 132. Baskets made by Children in Leyland School

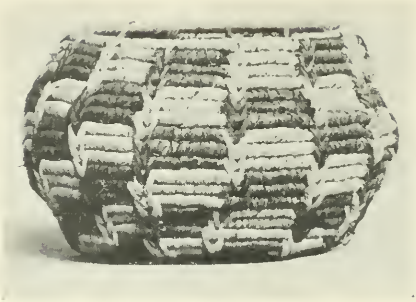

FIG. 133. Basket.

FIG. 134. Basket.

needed some modification on the former method, since there were no holes as in 'long and short' stitch. Therefore the children practised pattern-making with sticks about $1\frac{1}{2}$ inches long, as in the figure (130).

After repeating on the blackboard some of the designs, one shown in Fig. 130 was chosen. This was made by all the children in rushes or sticks.

The *course of work in basketry* shown in Figs. 131 and 132 would be suitable for children from the ages of seven to twelve years. The examples were all worked

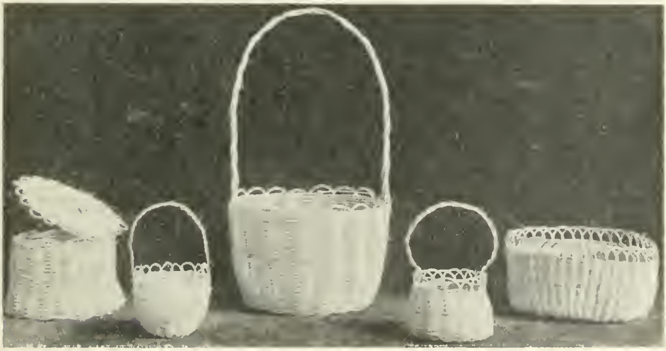

FIG. 135. Baskets woven in Cane.

by the children in Miss Thwaites's school, and for the work of young children they are astonishingly well done. Colour and design of varying difficulty have been introduced in all.

Those in Fig. 131 (1 and 2) are all worked in 'long and short' or 'lazy squaw' stitch.

In Fig. 132 (1) the tiny wallet was worked in 'half-hitch' stitch, the open basket in 'lace' stitch, and the first basket in 'figure eight' stitch.

In Fig. 131 (3) the first is in 'long and short' stitch, the second, fourth, and eighth in 'half-hitch', the third in 'long and short' stitch, the fifth in 'figure eight'

stitch, the sixth in 'long and short' stitch, with wrapping several times between each stitch.

The hazel-nut and the strawberry have been introduced into the designs with excellent effect.

The basket showing the Welsh motto (Fig. 134) was worked by a student of Cherwell Hall College, under the tuition of Miss Morris.

Fig. 135 shows some examples of baskets woven in cane.

Books of Reference

Indian Basketry, by G. W. James.
Aboriginal American Basketry, by O. T. Mason.
Coiled Basketry, by Mildred Swannell.

CHAPTER XIII

WEAVING

Fair warp and fitting woof
Weave a web that bideth proof.[1]

Weaving was one of the earliest, and still is one of the most universal, of the textile arts. The skill and cunning device displayed by the birds and fishes in the construction of their nests is proverbial, and even to the human race weaving seems to be so natural as almost to be instinctive.

Our first parents probably twisted and interlaced the stems and leaves of plants to make their leaf garment, and as weaving must have been practised in the days of Noah, it may well have been one of the pastimes on board the ark.

It is true that

> The weaver's craft
> Still find we up and down
> In country and in town,
> The footprints of our father's holier tread ;
> A relic here and there,
> A pageant or a fair,
> An old tradition floating round the dead.

The remains of the weaver's art found in the Swiss lake-dwellings are generally believed to date from the Stone Age, and to be the oldest specimens in existence.[2] Some of these fragments may be seen in the British Museum. Charred remains of woven fabrics are common, and in some of the caves and rock-shelters which have served as tombs, the action of certain salts

[1] Motto of the Canterbury Weavers.
[2] *Hand-Loom Weaving*, by Luther Hooper, p. 6.

in the soil has preserved examples of prehistoric work.[1]

Cloths were often used in the making of pottery. Their function may have been to prevent the clay from drying too quickly, to facilitate the handling of a clay vessel, or its removal from a mould. Mr. W. H. Holmes has taken casts of the impressions made on pottery by such fabrics, and thus the patterns of the weaving may be seen much more clearly than in the negative impression. Not only is the character of the weaving shown, but in many cases the nature of the materials used may be clearly seen. The aboriginal pottery is thus 'made to assist in telling the story of the origin and evolution of art, and finally of man. . . . Every touch of the potter's hand becomes, through changes wrought in the plastic clay by the application of heat, an ineffaceable record of man's thought and woman's toil '.[2]

Frequent allusions to the art of weaving in Egyptian, Greek, and Roman times have been made by classical writers. The tomb at Beni Hasan, Egypt, provides us with illustrations of Egyptian weaving, while the classic looms of Penelope and of Circe are pictured on Greek vases.[3]

If we accept the dictum that the school handicrafts should parallel the common social industries we must include weaving in our list, for practically everything the child wears is made from products of the weaver's art. During a course of simple weaving much may be done to encourage natural curiosity as to the origin of common things, to emphasize our relation to the animal and vegetable world, and to develop a faculty for making the most of things.

Since weaving may be numbered with agriculture and building among what have been called the three

[1] *Prehistoric Textile Art of the Eastern United States.* Twentieth Annual Report of the Bureau of Ethnology, 1891–2.

[2] *Aboriginal Pottery of the Eastern United States,* by W. H. Holmes.

[3] *Hand-Loom Weaving,* by Luther Hooper.

primal race occupations, it follows that the technique of the handicraft furnishes the writers of prose and poetry with many a trope and allusion. Hence some simple technical knowledge of the weaver's art will tend to enrich the child's own language, to help him to appreciate the frequent references to the art of weaving found in literature, and to follow with fuller understanding such an inevitable comparison as that of the many-coloured strands which make up the sum of any human life, with the warp and varied woof of the weaver's web.

As Browning says in *Master Hugues of Saxe-Gotha* :

> Such a web simple and subtle
> Weave we on earth here in impotent strife,
> Backward and forward each throwing his shuttle.

Little children delight in simple weaving, and the interlacing of coloured strips of material will provide them with congenial occupation for hours. Ruskin seems to suggest that the love of seeing patterns of interwoven material is almost part of our nature, for he speaks of the 'sublime pleasure we have in watching the branches of trees, the intertwining of the grass, the tracery of the higher clouds'.

A course of weaving is perhaps the best preparation a child can have for making designs, since the very act of weaving is full of suggestion for the formation of simple patterns.

Ruskin says, 'This system of braided or woven ornament . . . is universally pleasing to the instinct of mankind. I believe that nearly all early ornamentation is full of it—more especially perhaps Scandinavian and Anglo-Saxon.'[1]

Practical ideas of number are gathered quite naturally during a course of weaving. Since each object should be designed for a special purpose, preliminary measurements and calculations as to its size and shape must be made. Thus the fitting of the floors of the

[1] *Stones of Venice*, vol. ii, p. 136.

doll's house with floorcloth, matting, or carpet involves accurate measurement of the floor space, careful calculation of the amount of material required, and in some cases the expenditure of thought in constructing the looms so that a number of pieces of weaving may fit well together. Before the windows and doors of the doll's house can be furnished with curtains and mats, the bedstead with bed, bolster, pillows, blanket, and counterpane, or the sofa and easy-chairs with cushions, spaces must be measured and practical judgement brought to the consideration of each case, so that every article may suitably fulfil its function. The dressing of a doll involves careful measurement of the doll, and some amount of calculation and forethought to ensure that the garments shall be well adapted to the use for which they are intended.

Besides such considerations of space and area which enter naturally into the construction of looms, exercises in practical arithmetic are provided in estimating the amount of warp required for stringing each loom.

In the actual weaving, number seems to be inherent. No pattern can be constructed without dividing and analysing the whole number of warp threads in a loom in such a way as to start the natural cultivation of a good working knowledge of the properties of number, while the continued habit of dealing with various numbers and discovering the varied grouping and combinations which are possible, will tend to lay a sound foundation on which a later scientific knowledge of number may be built.

By training children to deal with such practical problems something may be done to encourage the introduction of exact and mathematical ideas into the practical economy of the simplest home.

When coarse materials are used, weaving is a form of handwork quite suitable for young children of about six years and upwards, and it is a good preparation for needlework. It satisfies the child's love of making things, and it provides him with a means

of converting such waste material as most children can have for the asking into useful little objects. The things made in school should be such as may be put to an immediate use, and the use should not be too remote from the child's interests, for the provision of a real and definite motive for enthusiastic work is most imperative. The doll's house seems to offer one of the best means of utilizing the results of a child's first efforts in the art of weaving. The first exercises should be such as can be quickly finished. The impatient little child needs all the encouragement he can have. By degrees the exercises should increase in difficulty as the child grows in years and in faculty. Thus the virtues of concentration and of continued application to one task may be cultivated gradually as he gains power and confidence in himself, but when the first exercises are long or laborious a thwarting influence is in operation, which daunts the little worker.

Spinning

It is probable that the first products of weaving were made from unspun materials.[1] In the use of such materials as long grasses, rushes, and flexible stems of plants the desire to make the weaving material uniform in size would suggest placing the tapering ends side by side, and perhaps twisting two or more of the thinner strands together. After a time finer fibres would be used, the advantages of twisting would soon occur to the workers, and the utilization of many vegetable fibres and animal substances would follow naturally.

Mr. W. H. Holmes says, 'Spinning was probably not devised until the weaver's art had made considerable advance, but its invention opened a new and broad field, and led to the development of a magnificent industry.'

The spindle-whorls found in British pit-dwellings

[1] See *Prehistoric Textile Art of the Eastern United States*. Twentieth Annual Report of the Bureau of Ethnology, 1891 2.

and tombs show that the art of spinning was practised in the Bronze Age.[1]

A figure of a Greek spinster may be seen on an ancient Greek vase in the British Museum,[2] the date of which is 500 B.C.

Dr. Dewey in *The School and Society* has told us of the experiment in Chicago when children prepared raw cotton and raw wool for weaving. He says: 'They re-devised the simplest process for spinning the wool—a pierced stone or some other weight through which the wool is passed, and which as it is twisted, draws out the fibre; next the top, which was spun on the floor, while the children kept the wool in their hands until it was gradually drawn out and wound upon it.'[3]

Even when such experiments are not feasible, simple ideas of the process may be given by letting the children draw out and twist any suitable material that can be obtained. A little raw wool can generally be brought by country children, and such experiments would prepare the way for the invention of a simple spinning apparatus.

Where wool cannot be obtained, strands of hay, straw, and raffia may be twisted and used as handles for baskets, or for finishing any simple objects that may be in course of manufacture.

Plaiting is a very simple occupation, and one to which children take very readily. Many objects may be made by sewing the plaits together, but this presents some little difficulty to the smallest children. The plaits are, however, very useful in finishing off many of their little pieces of handiwork.

The tiny pair of slippers shown in Fig. 105 were made of raffia; the plait was first coiled round itself to form a centre, continued by leaving a loop as shown, working round this to the desired size, and then gradu-

[1] *Life in Early Britain*, by B. C. A. Windle.
[2] *Hand-Loom Weaving*, by Luther Hooper.
[3] *The School and Society*, p. 35.

ally drawing in for the sole and finishing by joining down the centre, as shown in the larger slipper.

The art of weaving branches in two directions—the more flexible materials are employed in the weaving of fabrics, and the more rigid in making various kinds of basketry. From the coarse wattling and interlacing used in the construction of wattled dwellings, fences, fish weirs, rafts, &c., the making of shields, quivers, cradles, and basketry generally is developed. From the weaving of less rigid materials to form matting for beds, seats, blinds, floor and roof coverings, &c., we pass naturally to the manufacture of the softest and most pliable materials.

The young child will, of course, not differentiate between the two branches of the art, and as it is essential that he should use a variety of material, chosen by himself if possible, the early stages of little children's weaving will include the beginnings of both handicrafts.

Materials

The first materials used by the little child should be coarse. They may be gathered from nature, such as the wide leaves of the wild iris, of coarse rushes and grasses, or collected from the home, such as the cuttings left from the shaping of garments, strips of flannel selvedge, or of worn-out clothing, of American cloth, of paper, or of any other suitable material. A school collection of materials may be made by teachers and children, and may include a stock of straw, of rushes dried gently in the shade, of strips of paper, which may be obtained from the bookbinder or the printer, strips of cloth of varying width and thickness.

Such a collection may be supplemented by the purchase of a few pounds of such prepared material as chip, raffia, knitting-cotton, carpet-warp, jute, and wool, a few balls of string, knots of narrow coloured tape, and a set of mat-weaving materials, such as are used for paper plaiting.

Thrums (or short lengths of wool left over from weaving), which may be bought for 1*s.* 4*d.* per pound, form delightful material for training the child in arranging colours artistically.

During some weaving lessons children should be allowed to make what they like, and to choose their own materials. This is easily done if, shortly before the period for the distribution of material, slips of paper are provided, which the children may sign, enter the names of the materials they need, and then drop the slips into a box provided for the purpose.

When the object is not of their choice they should be allowed a voice in the selection of the material, its thickness, colours, &c.

Warp. This must be strong, and after the first exercises may often be much finer than the woof.

Just as in the history of the handicraft fingers were used before tools, the child's first weaving should be quite free—his fingers will serve as a shuttle, and the desk, table, or floor will take the place of a loom.

Even within the confined limits of the ordinary schoolroom the children can invent their own apparatus, and, if possible, no tool should be supplied until the children have reached the point where the need for such a device has been felt. This not only leads to a more intelligent knowledge of the functions of a tool or a device, but it develops the inventive faculty, and keeps the mind alive to new possibilities at every turn.

The primitive weavers found it comparatively easy to weave with the fingers as long as they used such firm materials as grasses or rushes, but when the softer and more flexible materials were dealt with, some means of stretching and keeping the threads in order would be needed. The device generally used for this purpose is called a *loom.* The threads which are stretched from top to bottom of the loom are called the *warp*, and those woven in and out are called the *woof* or filling.

The *shuttle* is the tool on which the weft is wound, and by means of which it is woven or *thrown* from one

side of the warp to the other. The simplest shuttle consisted merely of a slender stick.

Weaving consists of three processes :

1. Taking up or lowering the sets of warp-threads and opening out a space through which the shuttle can pass. This space is called the *shed*.

2. Passing the shuttle from side to side—*throwing the shuttle.*

3. Pressing the thread down in its place on top of the other woof threads by means of a *batten*.

The batten may be a finger, a needle, a shuttle, a reed, or a special tool for the purpose.[1]

The finished weaving is called the *web*.

Looms

It is probable that the first looms were either made by hanging the threads forming the warp from the branches of a tree, or by pushing two sticks in the ground to serve as supports for a third, to which the warp was attached. Accounts of the early weavers working at their looms under the deep shade of the low-hanging branches of trees seem to describe a life as free and fresh as that of the Garden of Eden.

> Great genius of the ancient times !
> A loom like thine was well worth leaving :
> To thee what are our feeble rhymes ?
> First master of the art of weaving !
>
> Between two trees thy web was hung,
> Thy cloth-beam nearly touched the ground,
> While birds, enchanted, sweetly sung,
> And fruits, delicious, grew around.
>
> Thou breath'd the freest air of heaven,
> The sun, unclouded, gave thee light ;
> No lamp, no gas, to thee was given,
> Through day thou worked and slept at night.
>
> BRIEN DHU O'FARRELL.

[1] See *A Primitive Loom for Weaving Narrow Fabrics*, by O. T. Mason.

Where children are able to work in a school garden they may be allowed to revert temporarily to such Utopian conditions.

The earliest drawing of a loom is to be found in a tomb at Beni Hasan, in Egypt, and its warp seems to be stretched on the ground.[1] A later Egyptian drawing shows an upright loom.

From a comparison of these Egyptian looms with those of Circe and Penelope, 'we can gather that, owing to the different methods of stretching the warp, peculiar to Egypt and Greece, the Egyptians beat the weft together down from *above*, whilst the Greeks beat theirs up from *below*.'[2]

The taking up or leaving down each alternate thread, as in simple weaving, soon becomes tedious, and then follows the invention of devices to enable the process to be more easily or quickly done. The earliest and the simplest consists of a rod of wood, laid across the warp-threads, and attached to each alternate thread by means of loops of thread or fine string. 'The weaver crossed her warp for the shuttle by simply pulling this heald rod forward, passing the shuttle through, and then letting go for the next passage of the weft, the warp readjusting itself to its own tension.'[3]

The child can easily reinvent such simple devices for lifting or depressing sets of threads.

A later form of the heddle or heald,[4] commonly used in a handloom for the double purpose of raising and lowering the warp-threads and for beating them up together, may be made from narrow strips of wood, such as can be obtained by splitting slender rods of willow with a knife.

A sufficient number of these to provide spaces for separating all the warp-threads on the cloth being woven in a particular loom, may be fastened to two

[1] *Hand-Loom Weaving*, by Luther Hooper, p. 119.
[2] Ibid. pp. 21–2.
[3] *Woman's Share in Primitive Culture*, by O. T. Mason.
[4] See the heddle in the handloom shown in Fig. 137.

parallel strips of wood. If it is thought desirable to follow the historical order of development, the little sticks may be at first tied to the cross-bars, as they were in the first heddles of the kind used by the early weavers.

Later the small vertical bars may be inserted into cross-bars made of two thin pieces of wood, and fastened by means of glue or small nails.

Holes for passing the warp through are made in the centre of each of the smaller parallel laths.

Where the children do not work in wood, a heddle may be made of cardboard, as in Fig. 137.

Little children's first attempts may also be made with moderately firm materials, such as coarse grasses, rushes, or stiff paper. At first the material will be given, but no loom will be supplied.

As a desire to work more quickly and effectively arises, the more ingenious in a class will find some means of holding their warp firmly. Others will readily adopt the suggestions of their fellows, and fit them to their own requirements.

There is no need to drive the invention of apparatus beyond the limits of common sense. When the child wishes to adapt to his requirements a tool he has seen in use, his suggestion should be accepted. Thus children are nearly always ready to suggest the use of a bodkin or a large darning-needle as a shuttle.

Looms for Children

As it is easy to cut cardboard looms of any shape, they will probably play a large part in the first weaving exercises of little children. When weaving is taken before their fingers are strong enough to cut the cardboard, they must receive help in preparing the looms, but even children of six or seven years easily learn to plan out the space for a loom of a certain size and shape, and to do all but the actual cutting.

The chief drawback to the cardboard loom is that as the warp-threads are so close to the cardboard as

to allow but little scope for raising and depressing them, the work soon becomes somewhat tedious.

The process of weaving in the loom in Fig. 136 is facilitated somewhat by the raising of the warp-threads,

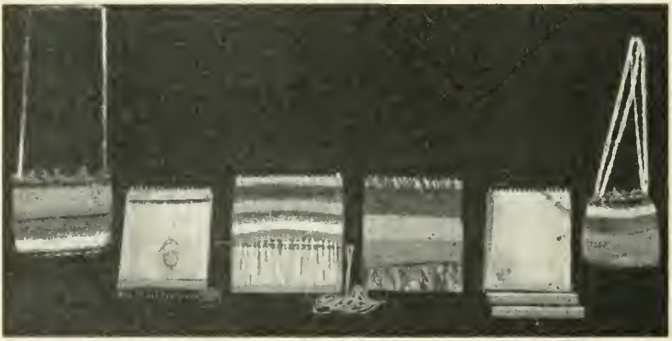

Fig. 136. Looms.

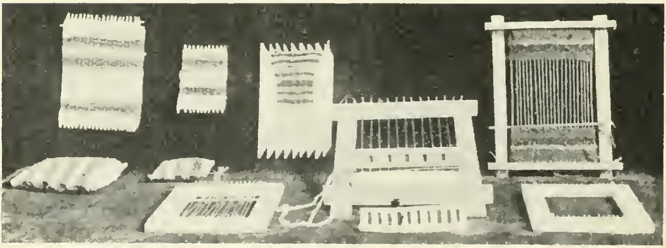

Fig. 137. Looms.

by means of the strips of wood nailed at the end of both sides of the loom. This is an advance on the cardboard loom, as the raising of the work gives more play to the shuttle or needle. This contrivance is, however, a little cumbrous, as when the weaving is finished it can only be removed by taking off the strips at the end.

This loom is specially well adapted for the weaving of articles that do not require a seam at the side.

Fig. 137 shows (1) a doll's bed and pillows woven on a cardboard loom by passing the woof round and round.

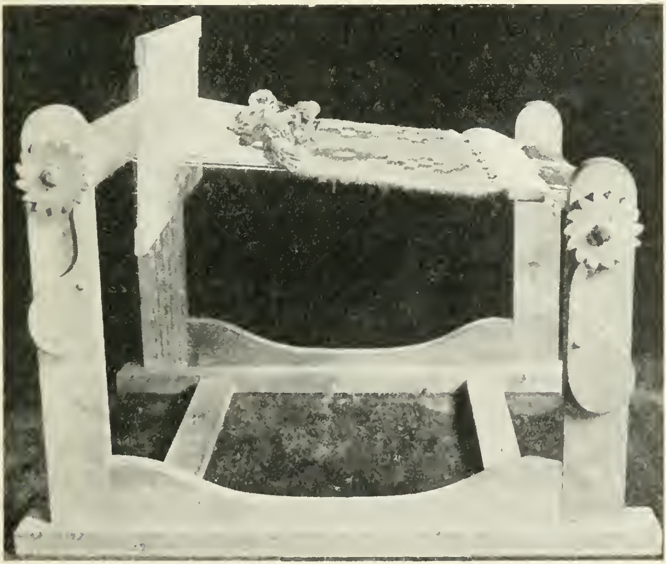

FIG. 138. Norwegian Loom.

The cardboard loom, showing the weaving gradually getting narrower towards the centre of the loom, shows the natural result of weaving when no stays are used to keep the web of uniform width.

In the wooden loom, which is tilted up on the right of the figure, a knitting-needle has been fixed at each side of the warp-threads, and fastened by passing through two holes in the end of the loom. This was suggested by the contraction in the previous loom.

The two smaller wooden looms in the figure consist

of drawing-slates, into the frame of which have been put a number of small nails for attaching the warp, and small staples at the end for fixing knitting-needles or pieces of strong wire. Such small looms of uniform size are convenient for weaving squares, which may be joined together for making floor covering for the doll's house.

In the two larger wooden looms the warp is attached to nails in the one case, and by winding around saw-cuts in the other.

Looms may be constructed on boxes. A cloth-beam for rolling the finished work may be made to revolve in various ways.

The loom shown in Fig. 138 was made in Norway, and has already served to stimulate an enthusiastic teacher of handwork to construct a rough one of her own.

Connexion with other Schoolwork

Weaving, as a school handicraft, will grow very naturally out of stories of primitive life. The child's interest in the rude shelter woven by Sharptooth from the pliant stems of plants, or in the rough basket of rushes made to carry the wild fruits she gathered in the woods, frequently leads to his spontaneous construction of similar objects.

Before little children begin to weave at their tables, first ideas of the over and under movement of simple weaving may be gained more or less unconsciously while they are playing such singing games as 'In and out the windows,' or such a kindergarten game as 'The spider's web', while the plaiting of the Maypole, and dancing a weaving dance will supply many practical ideas for making suitable patterns for weaving.

If a more formal lesson is needed to explain the alternate raising and lowering of adjacent sets of threads, in order to open a space (the *shed*), through which

the woof can be passed from side to side, such an exercise as the following may be given :

Any number (say six or eight) of wide pieces of tape or braid, or of strips of material, to represent the warp, might be held at each end by children, who for convenience' sake might number as for drill. The odd numbers would raise their strands, the weft (consisting either of a number of strands or of one piece wound around the shuttle) would be thrown to a girl at the opposite side, and the warp-threads lowered ; then the even numbers would raise their threads, and the process would be continued until the idea is clear to the children.

Conversations about the work will be followed by the recognition of weaving in clothing, in house furnishing, and in the woven and wattled fencing of cottagers' country gardens and farmers' fields.

Stories of real weavers in ancient and modern times will help the child to link up his disconnected ideas, and better to understand his everyday world. The account of the wool from the back of the sheep to the cloth for the coat of a little boy or girl may be given in some such form as Emilie Poulsson's *How a Little Boy got a New Shirt*.

The observation lessons taken in connexion with a course of weaving should include some on the marvellous work done by the birds, and by some fishes and insects. Thus the child's mind may be filled with admiration and with a sense of wonder for the works of the Creator. Stories or poems told or recited to the children after the contemplation of such works of skill as a bird's nest, a stickleback's nest, or a spider's web, would help to make the impression a lasting one.

When pictures and descriptions of spinning and weaving in other times and places are given and discussed, they tend to have a broadening effect on the mind of the child, and they help to give touches of social interest to the later study of geography and

history. The loom made for the Lapland girl from the bones of the reindeer may be compared with that of the maiden living in India. The children may be encouraged to build up a picture of the Lapp girl sitting in her dark hut, weaving by the dim light of her blubber lamp, and to contrast it with that of the Hindoo weaver seated out of doors, with her feet dangling in a hole cut in the earth, and her loom laid on the ground in front of her. The Greek looms may be compared with those used in Egypt.

We have seen that 'the art of weaving is exceeding old'. It follows that from our storehouse of fable, fairy tale, and myth can be found stories made in the morning of the world—stories such as the child loves, and such as encourage his imaginative flights into 'cities not made with hands'. The folk story and the myth are such as touch the mind of the child, as they did the minds of the child-peoples when the world was young, and they colour the dawn of his intelligence with hues as bright as those which herald the coming of Aurora.

The little stone spindle-whorls which have survived from prehistoric times were once called fairy mill-stones, and a knowledge of the methods of spinning flax into thread was formerly believed to have been given by the agency of supernatural beings. This idea may be traced in such stories as *The Old Woman and her Daughter*, and in *Walloty Trot*.

Myths such as Minerva and Arachne, Penelope and Psyche, give the touch of mystery and romance which the child loves.

Little children of six, seven, or eight years delight in such poems as 'The Wonderful Weaver'. They are almost as pleased with the description of him 'weaving his white mantle for cold earth to wear' as with their prime favourite :

> Old woman, picking her geese,
> And selling her feathers a penny apiece.

Their pride in their ability to understand such technical terms as 'shuttle' and 'loom' in the lines:

> With the wind for his shuttle,
> The cloud for his loom,

is great.

A little later they thrill with patriotic pride as they recite:

> Swift shuttles of an Empire's loom
> that weave us main to main;

or they enjoy the mystical romance of

> There she weaves by night and day
> A magic web of colours gay.

A Leprachaun Doll

FIG. 139.
The Leprachaun.

An illustration of a Leprachaun doll dressed by children of about seven years of age is shown in Fig. 139.

Their interest in such eerie creatures had been awakened on the realistic side by a story of the pygmies of Central Africa. As a means of realizing their life more fully, each child made an oval hut of twigs interwoven with leaves. A forest grew up in a sand-tray by planting a number of tiny, leafy boughs. About eighteen of the huts were arranged in a circle to form a miniature pygmy village, similar to that shown in a picture in Stanley's *Darkest Africa*. During clay-modelling time this village was peopled by tiny figures modelled in clay, and painted black to represent the dwarfs. The mythical aspect was given in their literature lessons, when the children heard the

Celtic story of the fairy shoemaker, and learnt part of the poem ('The Leprachaun') by William Allingham.

Shortly after, the sight of a Leprachaun doll gave rise to a suggestion that a similar doll should be dressed. A headless doll was furnished with a head by the teacher, who tried to give his face just the correct blend of benevolence and mystery supposed to characterize these fairy creatures.

Suggested Course of Weaving for Children

1. *Free weaving* of narrow *strips* (about $\frac{1}{3}$ inch wide) of such material as stiff paper. A book-marker (which can afterwards be used, or taken home as a present) seems to be the simplest object, but many others can be invented by the children.

2. Weaving with *free warp and free weft*, i.e. with both warp and filling composed of short strands of material.

(*a*) With fingers and without the aid of any kind of loom.

(*b*) Using any simple device that the child can adapt.

Suggested articles. Mats of various sizes, doll's counterpane, floorcloth, doll's bonnet, scarf, child's pocket, handbag, needle-book, and blotting-book (see Figs. 141 and 143).

3. *Weaving on looms made of cardboard.* At first these may be prepared for the children, or they may be helped in preparing them. The weft may still be free, but for the loom the warp must be continuous.

Suggested articles. Mats, hammocks, curtains.

4. *Weaving on looms* (continuous warp and continuous weft). The children should now construct looms for themselves.

Suggested work. The furnishing of a doll's house, the dressing of dolls in various ways, e.g. Red Riding Hood, the Leprachaun, Canadian boy or girl dressed for ski-ing, snow-shoeing, or tobogganing.

Measurements

When the necessary measurements for calculating the size of the loom on which any garment is to be woven are taken, it is a good plan to let children write them down in a book kept for the purpose.

Preliminary discussions to prepare the children for taking their own measurements would naturally take place. During such preparatory talks the measurements taken from the doll may be compared with similar ones taken from some of the children. This makes the work more personal and interesting, and helps the children to understand measurement and proportion.

Fig. 140. Red Riding Hood.

Measurements for making hats. The doll for which the hat is intended, and a model of the kind of hat to be woven, should be to hand. The size of the doll's head is measured. During discussion the relation of the size of the loom to that of the circumference of the head may be thought out. Thus the circular loom for a tam-o'-shanter is generally twice the circumference of the head for which it is intended.

The tobogganing cap will be woven on a loom, the base of which measures about half the circumference of the head, while the top of the loom might measure half the base. The base of the loom (exclusive of the points) for the cap intended for the Leprachaun doll would measure just half the size of the circumference of the doll's head.

Since jerseys should be loose, and since weaving gives much less than knitting, the looms on which such jerseys as those worn by the Leprachaun doll or by Red Riding Hood are woven, should measure considerably more than half the measurement around the body of the doll.

Description of Illustrations of Children's Weaving

STAGE I. *Free warp and free weft*, i.e. short strands of materials for warp and filling. After a lesson or two spent in free weaving, permission to use any available device which they think helpful may be given to the children. In a class of six-year-olds who had received such permission, some of the children attached their warp to the desks, which thus took the place of the ground in the early Egyptian loom. Others asked for rulers, and to these, by means of pins, they attached their warp (strips of cloth and small pieces of tape); others preferred pencils, which were used in a similar way. Another section chose pieces of brown paper, to which they pinned their warp. Unfortunately, in a large class there is a danger of the majority following the few inventive pioneers, but the spirit of invention is present, and those who do not respond during the school occupation period are often inspired when at home. When this is the case their inventions are borne in triumph to teacher at the next school session.

The illustration (Fig. 141) shows some of the work. The first weaving (pinned to brown paper) has been finished by sewing little stars (in coloured cotton) around the edge where the warp and woof meet. Two children wove in this pattern; one called the work a dolly's hammock, and another said it was for a dolly's bedstead.

The second example, which is in progress, shows the loom made of two pencils. The next is, again, pinned to brown paper; both warp and weft are of old

American cloth, and show the weaving for the basket which stands by. The basket was copied from a model, and is finished by tacking together the ends of the right-hand weft and the top or bottom warp, and the left-hand weft with the remaining warp. The handle is tacked on last of all.

The fourth loom shows one of those formed from two rulers, and the dolly's coverlet on the little bed is a finished specimen made on a similar loom.

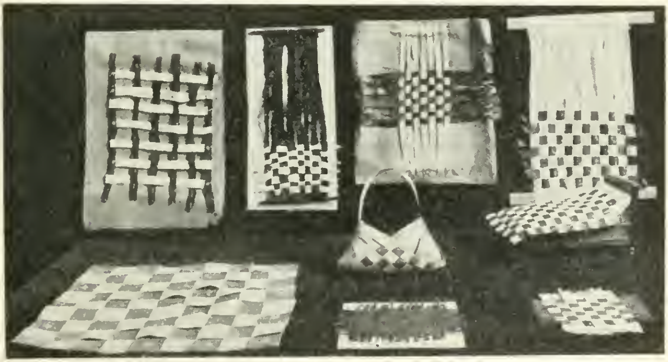

Fig. 141. Free Warp and Free Weft.

The large square is a piece of floorcloth for dolly's kitchen, made from American cloth. The mat in the centre is made from bits of bootlace, and is intended for the doll's house. The other, made from strips of cloth, is a mat for mother's vase of flowers.

In all the work shown in Fig. 141, both warp and weft are free at the ends, and it is consequently necessary to fasten the ends at the outer edges by means of a star, or by running around the edge.

The illustration (Fig. 142) shows:

1. A needle-book in three stages of construction, made from cuttings of coloured linings contributed by a dressmaker.

Stage (*a*) shows the loom of doubled cardboard, with the dark strips of stiff lining pinned over with short ends left for inserting in the centre of the cover when the weaving was finished.

(*b*) The weaving half finished.

(*c*) The finished needle-book.

2. Two bags woven from strips of cloth fastened over a cardboard loom.

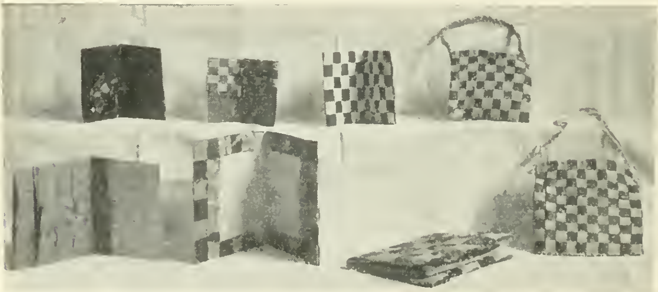

Fig. 142. Weaving on Cardboard Looms.

3. Three stages of a book-cover or a blotting-pad made from strips of stiff linings.

The cover was made to fit the small penny reading books, with their cardboard covers.

Stage II. *Continuous warp and free weft.* The children were shown how to make a cardboard loom. Since such looms may vary infinitely in size and shape, the number of objects which can be woven on them is infinite and varied, and the exercise of cutting them to the desired shape may form an introduction to the cutting-out of simple garments.

Among the objects woven at this stage may be mentioned rugs for the doll's house, varying in shape and size, coverlets for small perambulators or push-carts, tiny tablecloths, counterpanes, and curtains.

Continuous warp was used. The thread was tied to the loom by putting it through a hole at the top left corner, and then wound backwards and forwards over the points. Various methods of fastening the weft to the warp were devised. It was found that some kind of shuttle was helpful, hence darning-needles, bodkins, and paper-plaiting needles were generally used.

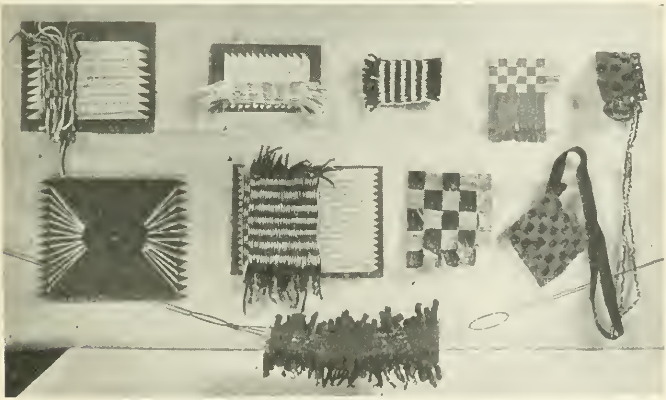

Fig. 143. Weaving.

In the illustration (Fig. 143) three of the looms are mounted on a dark background. The top row shows two tiny rugs in course of construction, with one finished specimen, and a doll's bonnet woven on a cardboard loom with strips of cloth. The second row shows a doll's hammock wound through two rings, which were firmly fixed to the centre of a piece of cardboard; another rug in course of construction, and a small pocket such as a child of about seven years could wear slung across her body from one shoulder (1) in course of construction, (2) completed. The pocket was made of four strips of scarlet and four strips of grey cloth. The four scarlet strips were

first fixed in position by tacking or pinning together over the small square of cardboard which served as a loom, when the grey strips were woven in and out with the fingers.

The finished hammock is suspended in the front of the illustration.

The illustration (Fig. 144) shows a doll's muff and scarf, with two looms for making the muff: (1) in a circular form, so as not to need joining, or (2) in a long

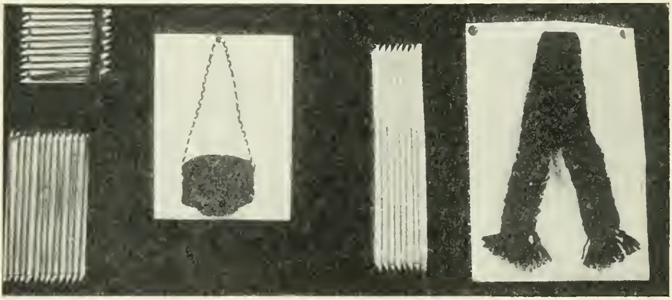

Fig. 144. Doll's Muff and Scarf.

strip. The scarf needs care in weaving or the sides will pull in, and the edges present an uneven appearance.

Fig. 145 shows looms for weaving the woollen hood and cloak worn by Red Riding Hood.

The hood is quite simple, and when the warp is wound on both sides by looping the wool over the points, the weaving is done by passing the weaving-needle through first one side, continuing on the other side, and then turning round and weaving back so as to leave one end open. The hood is sewn across the top.

The loom for the cloak is a little difficult to cut, and care has to be taken not to slip off the loops at the top. It is woven backwards and forwards.

The looms on which the clothing for the Leprachaun

doll was woven are shown in Fig. 146 (1, 2, and 3). The back, front, and two sleeves were each woven separately. The sleeves were woven round a small loom, so that no join was necessary. When the four separate pieces were finished, they were sewn together with a large tapestry needle and a piece of wool to match the woof.

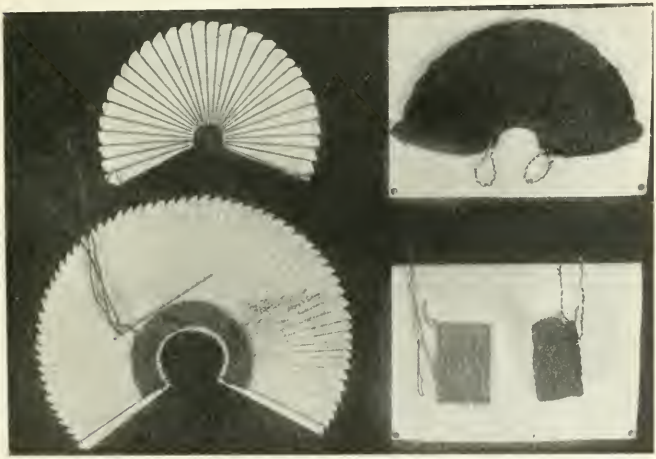

Fig 145. Red Riding Hood's Hood and Cloak.

Fig. 146 (3) shows the loom on which the legs of the little trousers were woven separately, and then made up by sewing.

The hat was woven as shown in Fig. 146 (2), and then finished by being joined at the sides and the top.

Fig. 147 shows:

1. Loom for weaving the uppers of a pair of *slippers*, which were woven in raffia on a string warp.

2. Back and front (two views) of a circular loom for weaving a *tam-o'-shanter*. The loom was strung by passing the warp through the piece of cardboard, which had to be cut away when the hat was finished.

3. Another *loom* (somewhat *easier*) for weaving a *tam-o'-shanter* hat. When the weaving was finished

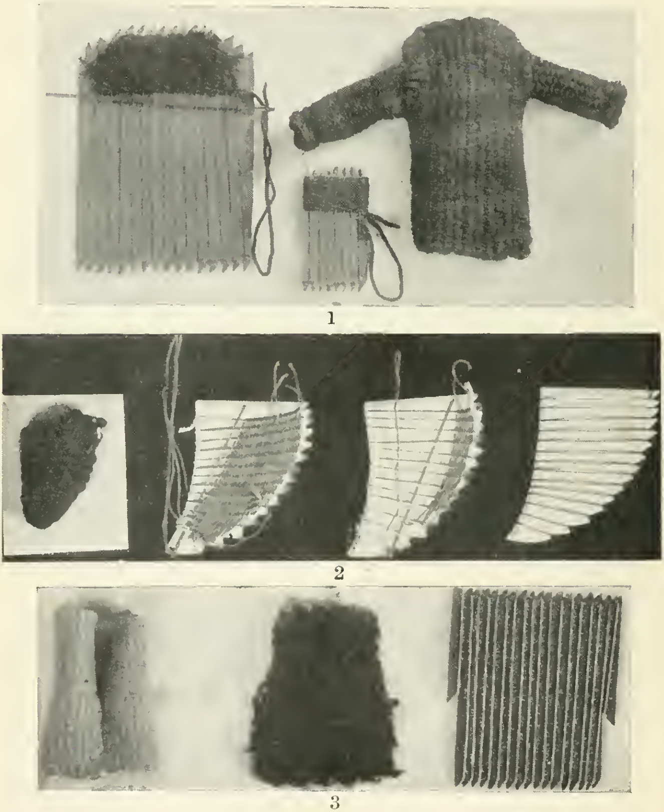

Fig. 146. Doll's Jersey, Lepraehaun's Hat, and Doll's Trousers.

the strings of the under-part were cut, and fastened into the edge.

4. Loom on which the *tobogganing cap* was woven. In the illustrations no attempt has been made to show

a connected course; the examples given are merely intended to be suggestive. The work is capable of

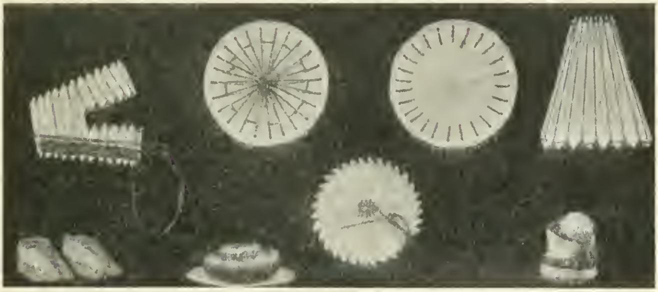

Fig. 147. Tam-o'-shanter and Slippers.

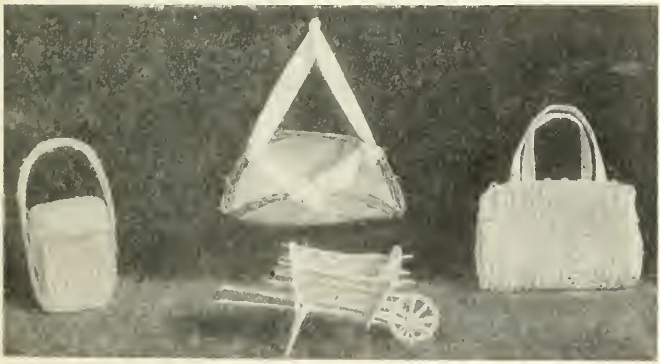

Fig. 148. Objects made from Raffia.

infinite variation, and since its chief value lies in the amount of originality it calls out of the pupils, it follows that no two courses, conducted educationally, can be identical.

Fig. 148 shows some examples of weaving with raffia. The little cube-shaped basket was made by joining

pieces of woven raffia together. The bag was made from an oblong piece of weaving with a circle inserted at each end. The *tidy* was made of a circular mat.

Fig. 149 shows doll's furniture made from cardboard, sticks, and ribbon.

In emphasizing simple weaving as a school occupation we are in tune with the spirit of the age ; for the recent renascence of home handicrafts has revived the art of handloom weaving, and at the present time

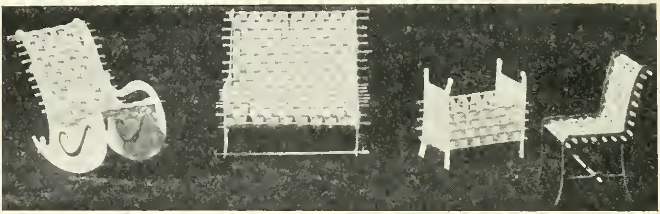

Fig. 149. Doll's Furniture.

many looms may be seen in the homes of our own islands as well as in those of Scandinavia and of Germany.

It is good that the means should exist to create such artistic handwork as was dear to the eyes of Ruskin, Morris, and Watts, and to all lovers of beautiful work.

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Aboriginal Pottery of the Eastern United States, by W. H. Holmes.

The School and Society, by John Dewey.

Life in Early Britain, by B. C. A. Windle.

A Primitive Loom for Weaving Narrow Fabrics, by O. T. Mason.

Woman's Share in Primitive Culture, by O. T. Mason.

Article, 'Weaving,' in *Encyclopaedia Britannica*.

Stones of Venice, by John Ruskin.

In the Child's World, by Emilie Poulsson.

CHAPTER XIV

MODELLING IN CLAY AND PLASTIC MATERIAL

From many points of view, modelling is one of the most valuable forms of handwork for young children. The mere handling of such a flexible material as clay is a delight to the child, as may be seen by the abandon with which he devotes himself to bending the shapeless mass to his will, and evolving the forms his fancy suggests. Through the medium of such apparently insignificant play he is developing power over the external world, and by so doing his latent possibilities are helped to become actualities. A good course of modelling from objects should offer the child an admirable means of obtaining a knowledge of form.

For the purposes of self-expression the mobile clay offers a medium by which he can embody in concrete form his own vague conceptions, and in many cases convert them into sound and workable knowledge.

Materials

The chief materials used in school are clay, sand, prepared plastic material, paper pulp, and a mixture of flour and salt.

The advantages of clay are its plasticity, its cheapness, and the possibility of making permanent objects by baking in a kiln, or in a slow oven.

The disadvantages are that it demands a certain amount of attention to keep it in order for use, and while in use it dries readily, and has a tendency to crack.

On the whole, clay seems to be far and away the best material for the crude free work of the little child, for

it is obedient to his lightest touch, and thus yields itself readily to transformation in response to his creative impulse.

Plasticine is less yielding, and much more expensive, but it is practically always ready for use. Where much handling is required, as in the finer work sometimes done by the older children, it is perhaps more suitable than clay, for it does not dry and crack as clay does.

Clay may be kept moist in a zinc-lined box, or in an earthenware pan with a lid. It should be well kneaded or beaten with a pestle when put away, sprinkled with water from time to time, and covered with a woollen cloth.

The grey modelling clay generally supplied to schools, being free from sand, is a good medium for child expression, but it cannot be fired. When, therefore, this is used, the child's work must always be of an impermanent character. In Japanese kindergartens and in the primary grades of some American schools, the difficulty of firing has been overcome, and some interesting specimens of the children's work may be seen.[1]

If prepared pottery clay could be obtained, or, better still, if we could mix sand or grit with ordinary clay in the right proportion, our children might have the joy of making tiles and pottery which could be taken home and used.

The rough red clay used for brick-making may be obtained at a cheap rate, and such objects as flowerpots in varied size and shape can be made, baked, and put to a practical use.

An admirable clay for use in school is that prepared at some pottery works near Manchester.[2] This is used at the Fielden Demonstration School.

It is good that the work of children should be so

[1] See a chapter on Pottery in *The Montessori Method*.

[2] Pilkington's Tile and Pottery Company, near Manchester. This clay can be supplied carriage free for 40*s*. per ton, 5*s*. per cwt., while a 10 lb. package will be sent for 2*s*. (post free).

done as to stand the ordeal of fire. The knowledge that

> To-morrow the hot furnace flame
> Will search the heart and try the frame,
> And stamp with honour or with shame
> These vessels made of clay,

will be the best stimulus that could be given to careful and thorough modelling.

Paper pulp may be prepared by tearing up newspapers into tiny pieces, soaking in water for several hours, pouring off superfluous water, and kneading up to the required consistency. A little size, starch, or whitening may be mixed with the pulp to render it more plastic and adhesive. This is an admirable material for making relief maps.

Dough. A mixture of six parts of flour to one of salt is used for map-modelling.

Boards measuring about 12 × 10 inches will be necessary for the children to model on.

Practically all the early work should be done with the fingers. When necessary, markings may be made on the clay with pointed match-sticks, and home-made chisel-pointed sticks may be used for cutting.

Free Modelling

This is the part of the work which makes the strongest appeal to the child. The busy fingers are busier than ever during the 'make-what-you-like' period. Almost equally popular are the periods devoted to the concrete marking out, in plastic material, the mental images gained during the early lesson in literature, history, and geography. The results of such exercises, crude and rudimentary as they are, are full of valuable lessons to the sympathetic teacher.[1]

[1] For the free illustration of nursery rhymes see *The Early Education of Children*, Part I, facing p. 88.

The illustrations in Fig. 150 show two of the results of free work after learning the poem:

Come follow, follow me,
Ye fairy elves that be;
Come follow Mab, your Queen,
And trip it o'er the green.

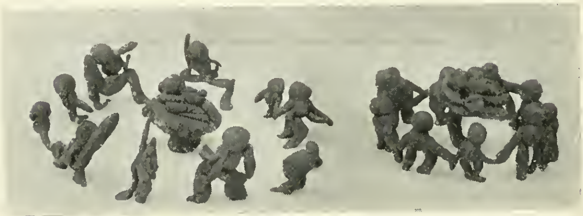

FIG. 150. The Fairy Ring.

The teacher suggested that the children should work out the scene described in the lines:

Hand in hand we'll dance around
For this place is fairy ground.
. . . .
Then o'er a mushroom's head
Our tablecloth we spread;
A grain of rice or wheat
The diet that we eat.
Pearly drops of dew we drink
In acorn-cups filled to the brink.

This free modelling might profitably be done side by side with the dramatization of history stories. The inevitable anachronisms which will frequently occur will give the teacher an opportunity of seeing and correcting the child's faulty impressions. Little children love to illustrate such a subject as that of Raleigh playing the courtier to Queen Elizabeth, by spreading his new velvet cloak for her to walk over, and the child's desire to make the modelling accurate will

result in vivid concrete ideas of the social life, and of the costume of the period.

When the teacher is ready to keep in touch with the child-mind, and to profit from the frequent revelations of childish ignorance and misconception, such work will be very valuable. Thus the girl of ten years who modelled Drake sailing round the world as if his ship were revolving in a circle at some distance from the

Fig. 151. Raleigh spreading his Cloak.

Fig. 152. Scene from *Gulliver's Travels.*

globe, instead of sailing on the surface of the water, could obviously have had no conception of the laws of gravitation.

An illustration of a scene from *Gulliver's Travels* is shown in Fig. 152.

Simple Modelling from Objects

In such work restraint on the part of the teacher is again necessary in order to allow the children scope to plan out their own methods, or at least to offer suggestions as to the best method of modelling certain objects. One of the methods adopted for demonstration work

with young children under seven years of age is as follows. Each child is provided with a model which he is encouraged to observe and to feel with his fingers. A piece of clay about large enough for making the desired object is provided. As most models can be shaped from the type forms, the teacher and children discuss the model to find out what method shall be adopted. The suitable type form (ball, cylinder, cube, pyramid) is made and the object is shaped from this form.

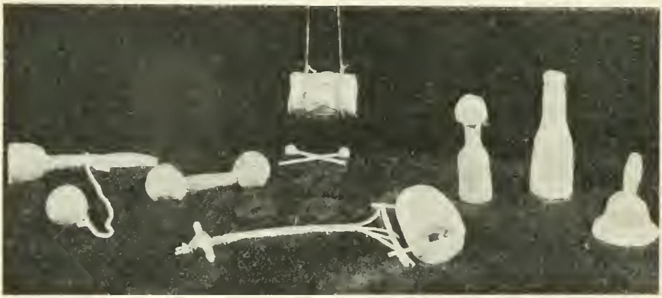

Fig. 153. Modelling.

A great variety of exercises will be included, such as pressing the clay with the tips of the fingers, rolling it into shape, hollowing it out, &c.

Fig. 153 shows a few objects modelled by little children from the sphere and the cylinder—separately and combined.

The objects illustrated include a cup and ball, a dumb-bell, a drum with drumsticks, a garden-roller, a ninepin, a bottle, and a bell.

The cup and ball and the drum are finished by the addition of knitting-cotton, while the handle for the garden-roller is made from willow twigs bound with raffia.

The cup and ball, dumb-bell, drum, and roller were

modelled from the sphere and cylinder of Gift II, with occasional reference to toys. The ninepin, bottle, and bell were modelled from objects and evolved from the cylinder.

It is almost unnecessary to add that when each step of the work is merely an imitation of some action the teacher has made, or some effect she has obtained, the child is not working from an object, although it may be present.

Lessons in which the children imitate work done by the teacher or work in response to her suggestions are sometimes necessary, especially at the transition period, when the child's interests are being shifted from the mere exercise of his activities to the results obtained. It is well, however, to bear in mind that merely as a training in skill their value is limited. They should so be placed in the scheme as to help the child in acquiring the simple technique which he needs for the improvement of the crude symbolic results of the earlier work, and as a means of helping him to fuller self-expression.

A valuable course of fruit and vegetables may be modelled. The provision of suitable models for children is often a difficulty, but the pupils can frequently help by bringing their own. For first lessons in true modelling it is perhaps advisable that the class should all do the same thing, as the teacher can then supervise and deal with difficulties more easily. Later, as the children acquire a working knowledge of simple method, various models illustrating an idea can be made by different children. Thus a nature lesson on 'How seeds are scattered' might be followed by the modelling of chestnut burrs, sycamore seeds, acorns, or any other seeds illustrating the central idea of the lessons that can be obtained. Wherever possible, work from individual models should be encouraged.

Leaves and *flowers* may be modelled occasionally while the children are cultivating and observing plants, or as a preliminary or supplementary exercise to a nature talk. As a rule very small plant forms should

not be chosen for modelling. Fine work, as we have said before, tends to develop the accessory muscles too soon, and sometimes causes chorea.

When flowers and leaves are modelled by young children, the leaves, stalks, and flowers are usually shaped in the fingers, and arranged on a board or slab of clay. A piece of clay of the necessary size is taken, and shaped into a rough ball. It is then formed by the fingers into the desired shape, beginning at the apex or base of the leaf, and continuing downwards or upwards.

Fig. 154. Wild Arum.

The *wild arum* in Fig. 154 was modelled by a child of about seven years of age. The method was as follows :

A slab which had been made during a previous lesson was placed on the clay board. A specimen of the wild arum was provided for each dual desk. During the nature talk which preceded the modelling the teacher opened out one of the spathes, while the children noted the shape, and drew it with their lead pencils.

This helped them to realize how large a piece would be required for the modelling. The spathe was shaped with the fingers, placed on the plaque, and folded over lightly at the base. The club-shaped appendix was then added, after which the lower part of the spathe was worked into shape with the finger. Then the stalk was joined on to the spathe.

The arrow-shaped leaves were next formed, gently

laid in position, then joined to the main stem by laying on circular strings of clay for the stalks. After the leaves were in position the markings for the veins were made with a tool.

Modelling by building up

This is true modelling, and after the infants' school and kindergarten stage is passed, the children should gradually be introduced to this method when the work lends itself to such treatment.

The work of the previous stage should, however, not be dropped entirely, but an effort made to evolve gradually, and to combine the two when desirable. Thus as children find that models cannot be satisfactorily finished when continually held in the hand, they often begin to follow the artist's method by placing their roughly-shaped model on the board to add the finishing touches. As success follows their experiments the teacher leads them by degrees to adopt the building-up method.

A course of modelling in the round should pass gradually to modelling in high relief. For the first exercises a simple plaque may be quickly made by taking a lump of clay and flattening it with the fingers into a more or less circular or oval shape, with an irregular edge.[1] During the next stage the children should learn to make a slab, and to plan out the space to be covered by a simple model, such as a leaf, a flower, or an animal form.

Animal Life

Exercises in modelling animals are very interesting to the children, and as an occasional exercise they are useful if the work is so conducted as to stimulate observation.

[1] See *Early Education of Children*, p. 341.

Since, however, the living creature cannot be so intimately and individually handled in school as the still life subject, such works must be regarded chiefly as memory exercises. When such work is genuine child-work, the results are very crude. The exercise necessary to obtain such crude results is often, however,

Fig. 155. Mouse.

Fig. 156. Dove.

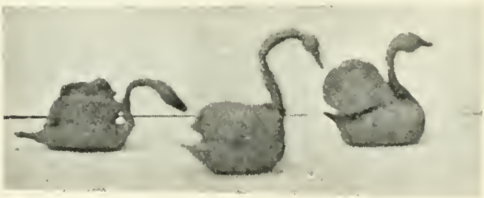

Fig. 157. Swans.

much more valuable to the child than that of making a finished model.

The mouse shown in Fig. 155 was modelled by little children of five years of age while they were observing a cage of white mice.

The dove (Fig. 156) was also modelled from school pets and directions from the teacher.

A class of children of six years of age visited and fed some swans which were kept in gardens near the school. On their return from their walk they modelled the birds from memory without aid or suggestion from

the teacher. Some of the results are shown in Fig. 157.

The snake was modelled by the teacher from a stuffed specimen in a case.

Modelling a fish. The illustration (Fig. 159) on p. 268 was the work of a child of between seven and eight years of age.

A goldfish swimming about in a bowl had been under observation for some time. During a nature talk the smaller fish was compared with a herring.

FIG. 158. A Snake.

Thus the children were helped to see the position of the fins. A drawing of a side view of the fish was then made with a soft pencil on a piece of cardboard. On this drawing the fish was built up.

A string of clay was placed along the outline of the back of the fish; as this was the highest part it was thicker than the clay which subsequently defined the outline of the body of the fish. The children built up the fish bit by bit by covering the drawing of the body with clay. The whole was then smoothed with the fingers, care being taken to press inwards from the outline towards the centre, to prevent the clay spreading beyond the outline. As the outline became lost in places, it was necessary to mark it out once more

by cutting away irregular bits with the point of the modelling tool.

The fins were next added, and lastly the finishing touches by making a cut for the mouth, a hole for the

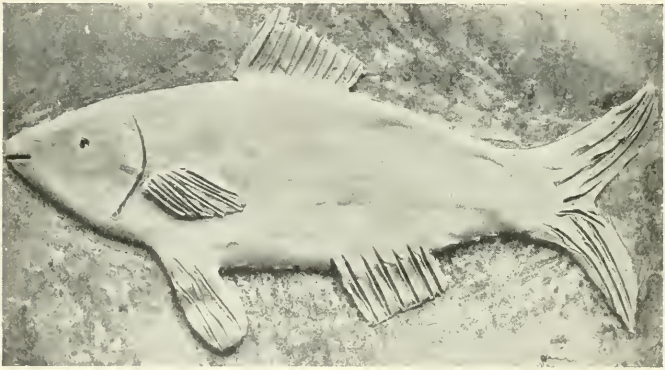

FIG. 159. A Fish.

FIG. 160. British Quern.

eyes, a slit for the gill-covers, and a few markings for the fins.

The models in Fig. 160 represent a British *quern* or *handmill*. The large one is the work of the teacher, and was modelled from a real one seen at Keswick.

The smaller ones were made by children from the teacher's model.

The *sabot* was built up from a tiny French model which has been found very useful for observation while Millet's pictures were being studied. If introduced as an exercise in modelling, while the interest in France and the French is at a high level, points of departure would offer themselves for the discussion of the industrious French peasantry working on their small holdings, or of the picturesque fishwives as they carry their baskets of fish from the harbours through the flagged streets of the fishing towns. The introduction of the square and less elegant Dutch sabot might lead to a discussion of the characteristic differences between the French and the Dutch.

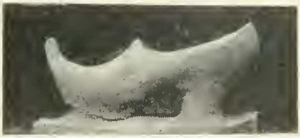

Fig. 161 Sabot.

Architectural Modelling

The characteristic features of a monument or a portion of a building may be shown by means of a plastic material, such as clay, plasticine, or paper pulp, or by a combination of a plastic with a more rigid material, such as wood or stout cardboard. In order to make an accurate model of a bit of architecture the pupil must cultivate the habit of close observation and of exact and careful work. Not only will such work be found the surest and best means of studying architecture and reading its 'sermons in stones', but it may profitably form a course correlative to the teaching of history, and as such will help to make its study a vital and living thing.

Models might be made of such British remains as stone circles and monuments. The characteristics of Roman, Saxon, Norman, and Gothic architecture may be shown and associated with the respective periods.

The little photograph in Fig. 162 is a crude attempt by children of six years to model the *Nelson Column.*

On Trafalgar Day talks about Lord Nelson and his brave deeds had aroused much enthusiasm. The monument in Trafalgar Square was mentioned, and post cards of it were examined with great interest. An attempt to model it produced fair results, but it was found impossible to make a clay column stand in a vertical position. For the next modelling lesson rods of wood were provided for a few children.

Fig. 162.
Nelson's Monument.

A reference to the last attempt resulted in a division of labour as follows:

The children who had the rods combined with their desk neighbours to complete the pedestal and the column. Others made the figures of Lord Nelson, while others busied themselves in preparing the lions to surround and guard him when he was mounted.

The pedestals were built, the rods covered with clay and pushed into the centre, after which the model was finished as in illustration.

No attempt was made to get exact proportion, but the relative lengths of the parts of the monument were roughly judged from the post card.

The model in Fig. 163 is a rough illustration of a Norman tower which was built by Robert D'Oyley at the time of the Norman Conquest. This tower is a part of the Oxford Castle.

Attempts to reproduce in miniature such relics of bygone ages with the natural accompaniment of stories of 'old forgotten far-off things and battles long ago', will increase the child's interest in the history of his country, and do much to contribute towards the

realization of Mr. C. R. L. Fletcher's ideal,[1] as expressed in the following oft-quoted words :

'My own view is that English History should be an inheritance of childhood ; that its legends and its romance should grow into our thoughts from very early years, and should expand themselves with the expansion of our minds ; that we should feel history and dream it rather than learn it as a lesson. Happy is the boy who, having so "grown up with" the story of his country, can people the fields and lanes of his home with the figures of the past, can hear the clatter of

FIG. 163. Tower of Oxford Castle.

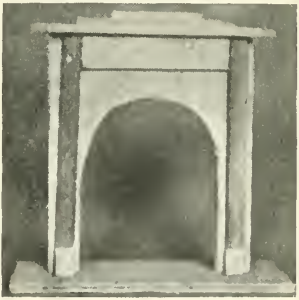

FIG. 164. Modelling an Archway.

Rupert's horsemen down his village street, and can picture the good monks catching basketfuls of trout in the stream (there were more trout in it before the Reformation), wherein he is failing to get a rise.'

The photographs in Figs. 164–7 represent the work of children in a Lancashire village. In this cotton-manufacturing district there is but little that can be dignified by the name of architecture, yet the fullest use has been made of the little that lies to hand. What a wealth of material for handiwork is offered to the dwellers in the historic cities of this 'Old Country'!

[1] From the Preface of *An Introductory History of England* by C. R. L. Fletcher.

The architectural modelling done in the Leyland School, Lancashire, included a gateway, a sundial, and a church window. During the course of the modelling many unofficial visits were paid by the children individually to the object chosen. The gateway was taken first, and as the work was experimental more visits were paid to the archway and more lesson periods devoted to the work than were necessary for later exercises of the same kind. As the children neared the gateway for their first visit they stood and viewed it from a distance. Then they drew nearer, and as they

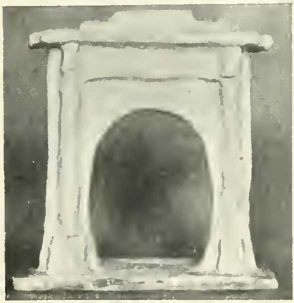

Fig. 165. Modelling an Archway.

Fig. 166. Modelling an Archway.

did so they noticed how the details began to appear. The rounded parts and the square parts were observed and fingered. The direction of each was noted. Then they stood under the arch to *feel* its width. It could cover them all. On return to school rapid models were made from memory. The next visit drawing-books were taken, and sketches were made.

The boys took string from their pockets, measured the various parts, and noted the proportions. During a later visit tape-measures were used to determine distances. The height of the trees near was noted.

Fresh models were now made. These were criticized by the children and the teacher, who called attention

to the good points. As it was found that the clay showed a tendency to sink down instead of preserving a rigid shape, it was suggested that rough wooden models should be made. These were covered with clay and wrapped round with wet cloths in order to keep them damp until the next lesson. Mistakes and omissions in these more detailed models were corrected by comparing them with the original. When finished the model was allowed to dry, and it was found that owing to the different character of wood and clay the

Fig. 167. A Sundial.

clay had shrunk, allowing a few cracks to appear. These the children filled in with size; then the whole was sized, and when dry was covered with a thin coat of black water colour paint. This was the nearest approach to the somewhat blackened stone that could be got. In the case of the gateway the lower part was covered with size, and sand was scattered over the floor to make an imitation of the road.

The cracks are rather apt to dishearten the young workers, but if filled in two or three times they do not get wider, and when all is sized and painted they are scarcely noticeable.

Architectural modelling can often be done by making

a number of small bricks of clay or other plastic material and sticking them on to a foundation of wood or stout cardboard. This method offers a good means of leading the children to see the evolution of the pointed from the Romanesque arch, and of calling attention to the simpler forms of arch such as those typical of Saxon and Norman work.

Modelling with Sand

Damp sand is an excellent material for the use of very little children. They can amuse themselves by moulding it into shapes in little moulds or tin pails, in making tiny gardens or Lilliputian forests. The universal love of sand-digging may be utilized in the child's more formal education. Representations of land-forms and lakes and river-courses may be made in a sand-tray.

When the clay is well damped and pressed, good representations of such buildings as castles can be made. The chief advantages are that the work may be done very quickly, and that it lends itself to protean changes. Thus the development of the castle in feudal times might readily be shown.

In the hollow of his hand
My child holds a little land:
Lord of all that land is he!
There are hills and meadows green,
There a river meets the sea;
And between,
On a rock an island town
Takes its stand,
Looking down
Over all the pleasant lea.
And its ramparts are the band
Of a crown,
Steeple-crested, gemmed and grand,
Lording all that little land,
So fair to see
In my child's hand![1]

[1] Laurence Housman.

CHAPTER XV

POTTERY

The handwork of young children reflects their life, and where facilities are afforded, attempts to reproduce the pottery used in their homes will probably be among the products of their earliest efforts in plastic art.

There is no sight more engrossing to a child than that of the potter at work, and indeed all of us who have had the opportunity may say with the poet—

> I remember stopping by the way
> To watch a potter thumping his wet clay.
>
> *Rubáiyát of Omar Khayyám.*

Pottery possesses many possibilities as a subject of school handwork, for it admits of easy gradation from the play stage to the great masterpieces of the art.

A double advantage is offered in the fact that it is possible to treat it as a subject in itself, and at the same time to throw illuminating sidelights on many phases of human life. When so taught incidental correlations with the subjects of history, geography, and literature present themselves naturally.

By working through some of the simpler stages of the art the child is led to understand the later stages, and a fuller sympathy with social and industrial aims should result.

Doing leads naturally to understanding and often to appreciation. The making of simple, pleasing forms will result in a development of taste. Then the vicious form and the gaudy colours will disappear from the homes of the future citizens, and a greater simplicity will prevail.

A study of pottery begun in youth may grow into

an engrossing hobby of later life. However dim the sensations of our childhood may be, most of us can recall the appeal to the imagination made by

> The coarser household wares,
> The willow pattern that we knew
> In childhood, with its bridge of blue
> Leading to unknown thoroughfares;
> The solitary man who stares
> At the white river flowing through
> Its arches, the fantastic trees
> And wild perspective of the view.

A steady development of such a romantic interest, by the side of a study of form, through its natural phases will provide many adults with resources and delights now unknown to them.

It is obvious that the limitations of the young child as to skill and equipment will foredoom to failure any attempt to model the fine examples of the art. Therefore it will be well to exclude from a first course of hand pottery any objects in which fineness and delicacy are fundamentally essential, and to confine our attention to such thick substantial articles as lend themselves to this kind of work. Among such may be mentioned flower-pots of varied size and shape, bowls for flowers, candlesticks, and shallow dishes.

When the subject is approached in connexion with a study of primitive life, or of that of history, many interesting problems may be presented to the children, whose theories as to the origin of the handicraft are generally fresh and ingenious. The bird's nest [1] theory generally finds supporters.

After they have tried to investigate such a problem for themselves, and have stated their theories, they will be interested to hear some of the more generally

[1] Man learnt the art of basket-making from a bird's nest. The clay-lined bird's nest suggested the watertight clay-lined basket. Cooking destroyed the outer part, leaving the inner.' *The First of Empires*. W. St. C. Boscawen.

accepted solutions of the matter. Such theorizing should never be separated from actual doing. Thus while they are considering the 'ally' found by man in 'the cool plastic earth',[1] the story of the Egyptian tale of bricks would offer an interesting opportunity to refer to the clay formed by the sediment left by the overflow of the river Nile, and to model a brick of soft soil moistened with water and mixed with straw. Such an exercise followed by a comparison of the 'clay well mixed with marl and sand' would help to solve a mystery which has puzzled many a child who has been unable to reconcile the process as he has seen it in this country with the references in the Bible story. Since the theories as to the origin of pottery are so various, any reasonable suggestion made by the children should be received with the respect and consideration it deserves.

Basketry may have been the 'Mother of Pottery', but, as Otis T. Mason says, 'The first man who trod in clay must have noticed that he made a pan impervious to water.'[2]

It has been suggested that the Eskimo woman (or her prototype of the Stone Age) was the first potter, and that the possibilities of clay as a material for the making of earthenware vessels was accidentally discovered through the use of a rude pan made to hold the blubber with which her lamp or stove is fed.

These lamps are usually made of soapstone, about two inches thick. This stone was chosen because it is the only available kind which will stand heat without cracking. At Bristol Bay, Alaska, no soapstone is to be found, and vessels of clay are used instead.[3] When the clay lamp is in the right condition for firing, i.e. when it has been allowed to become partially dry

[1] *The Makers of Black Basaltes*, by Captain Maurice Grant.

[2] *The Origin of Invention*, by O. T. Mason, p. 152, and Fourth Annual Report of the Bureau of Ethnology: *The Ceramic Art of the Pueblos*, by W. H. Holmes.

[3] See *Origin of Invention*, by O. T. Mason, p. 155, and *Woman's Work in Primitive Culture*.

before being lit, the constant burning has the effect of baking or firing the clay.

While the social life of the Eskimos formed the centre around which the handwork exercises were grouped, a teacher modelled a crescent-shaped vessel similar to that used by these people for lighting and warming their dwellings, and for cooking their food (see Fig. 168).

The completion of the lamp by the addition of a wick of moss or other vegetable fibre, and supplying it with oil or fat as a substitute for the blubber of the seal,

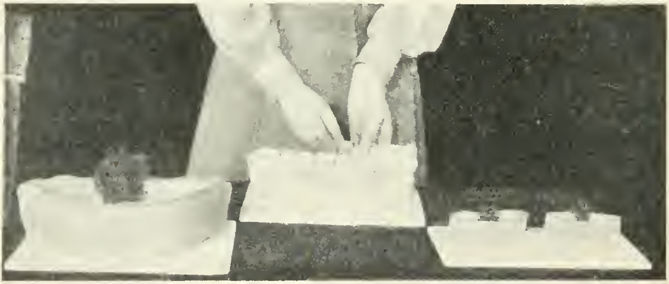

FIG. 168. Modelling an Eskimo Lamp.

whale, or walrus, always pleases the children. When it is lighted their satisfaction is complete, and they readily understand how its burning would result in a substitute for the more general lamp made of stone.

Discovery of Pottery through primitive methods of cooking food. The children's attempts to solve the problem may be followed by a demonstration of the method of cooking by dropping red-hot stones into a skin, a watertight basket, or a wooden bowl.

A few nuts might be roasted in a shallow basket protected by a lining of clay. This is done by placing a live fire consisting of half-burnt wood or charcoal with the nuts in the clay-lined basket. The wood fire is kept going and the ashes winnowed away by blowing.

The children's efforts in this direction may be supplemented or replaced by the use of a pair of bellows. They will be interested to learn that this method is still employed by some American Indians, and they will see how the repetition of such a process will lead to the hardening of the clay and the formation of a new vessel as the clay lining becomes baked and separated from the basket.

Primitive Methods

Many of the methods employed by the primitive potter in the days before the wheel was invented may be applied to the work of children, even when the work is not vivified by stories of the people whose methods are being adopted.

A study of the evolution of the potter's art will help the child to bridge the gulf that stands between the machine-made crockery of to-day and the first earthen vessel made by aboriginal woman.

Before any attempt is made to methodize the work or to render it formal, there should be an experimental stage, in which the children will be given free scope to apply their own methods, for it is acknowledged that the best way to obtain command over a material is to experiment freely with it.

Among the methods that seem applicable to the work of children are: A mass of clay may be taken and shaped with the fingers.

(a) *Pottery made by hollowing out a ball.* Some of the primitive bowls that have been discovered in those 'walled stone-chambers called "barrows"' look as if they had been scooped out from a ball. This coincides with the usual method adopted for the early exercises of children, and a beginning may be made by working according to this method.

The little vessels in the centre of Fig. 169 were all modelled by this method, and are the work of seven-year-old children.

Moulding and building up by coiling are among aboriginal methods which may be adopted for the work of a class of children.

(b) *Moulding.* A mould may be used as a core, around which clay is pressed, or it may be lined with clay. The shape of the clay vessel may exactly follow that of the mould, or the latter may be used as a starting-point from which vessels of various shapes may be fashioned. When it is so used it serves as a means of support for revolving the clay vessel as the work proceeds, and thus we find the beginning of the potter's wheel. Sometimes gourds, shells, and other natural

Fig. 169. Pottery made by hollowing out a Ball.

objects are used as moulds, but the more general practice seems to be as follows:

A hollowed-out piece of clay is pressed evenly and firmly into a shallow wide-mouthed basket, or the mould may be lined with a rope of clay by coiling from the centre outwards, after the method suggested by coiled basketry. The coils are rubbed out by smoothing and pressing the clay. The drying of the vessel generally results in a shrinkage of the clay away from the mould, and thus a new vessel is obtained. A pattern from the impression of the markings on the mould is left on the outside of the basket. In Figs. 169 and 175 may be seen the results of experiments of this kind with children of seven.

When it is desired to continue the clay vessel beyond the limits of the shallow mould, the latter is lined as before. The clay is then pressed until it projects about

half an inch beyond the edge of the mould. A coil of clay, a little thicker than the walls of the finished vessel are intended to be, and about ten or twelve inches in length, is taken, and fitted on to the projecting piece of clay. The vessel is finished by free-hand coiling until the desired shape is obtained.

The discovery of pottery may have been made by a prehistoric woman of genius somewhat as follows:

FIG. 170. Building up by Coiling.

FIG. 171. Children's First Attempts.

Her basket was placed in plastic mud near a river bank, and thus became daubed with clay. The exercise of ingenuity and thought prompted her to experiment by covering the whole of the basket with mud, and perhaps carrying water in it. The success of such a venture suggested placing the basket on the fire, when the basket-work would probably be burnt away, and the clay hardened into the form of its predecessor, the basket.

(c) *Building up by coiling without a mould.* The base is first made either by taking a mass of clay and working it into a circle with the fingers, or by making a coil, as

in Fig. 170, and then smoothing and welding the coils together by rubbing with the fingers before the sides are begun. Then the vessel may be made any shape that is desired by building up by hand. Care must be taken to keep the sides in during the building, as a certain amount of spreading out is inevitable during

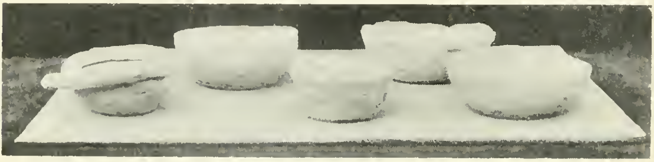

FIG. 172. The Method of building up.

FIG. 173. Shaping with Rough Piece of Pottery.

the process of smoothing. Four stages of the work are illustrated in Fig. 170, and Fig. 171 shows some results of a first exercise in building up by this method. The little potters were under seven years of age.

One row may be fitted on to the vessel and smoothed before another is added (see Fig. 172). The bowl in course of being made and the one next to it in the illustration were modelled by the teacher. The three

other bowls were made by children a little less than seven years of age.

The sides of a vessel are sometimes built up by means of a series of strips, each of which is broken off when one revolution of the vessel has been made ; it is then neatly joined to the base or to the walls of the vessel, and finished off before the next is begun. This seems to be a stage in advance of the building by coiling, which is obviously copied from basketry.

The Eskimo lamp in Fig. 168 was built by adding little lumps one by one. The crescent-shaped base was first made and smoothed ; then the walls were built.

Some primitive peoples use shells, pebbles, pieces of

Fig. 174. Ancient Drinking-vessels.

gourd, or other simple tools in shaping their pottery (see Fig. 173). The bowls in Fig. 173 were modelled from early pottery in the British Museum, which was found in a barrow at Roughbridge Hill, Wiltshire.

In Fig. 174 may be seen three drinking-cups, also modelled from specimens in the British Museum.

Card-Silhouettes

The first stages while the children are learning the possibilities of the material will be experimental. After these are over as much definiteness and exact workmanship as are compatible with the child's capabilities should be expected. The child must master the material, and not be mastered by it. Sometimes the children might make drawings from models of the

shapes which they intend to form with the clay. These may be cut out in stiff cardboard and used as guides for the modelling. Such work will be valuable as a variant to the usual practice and as a means of giving an increased knowledge of form by approaching the modelling by a fresh method. The child must not, however, learn to depend on such aid, for his eye must be trained to see and to judge proportion and form, and his hand to shape the material.

Forms of Primitive Pottery

It is probable that the first vessels modelled by the prehistoric potter were copied from the forms of such as were already in existence in other materials.

The earliest bowl made was probably a shallow vessel, with a rounded base and very wide open mouth. This vessel, gradually deepened into the hemispherical basin or bowl, would serve many purposes in the primitive home. Then it would develop into a globular pot with a wide mouth, or into a heart-shaped vase with a narrower opening. By and by the addition of an upstanding rim to a narrow-mouthed vessel would result in a jar or short-necked bottle.

As the potters gained skill new shapes would be tried, some of which would consciously or unconsciously be copied from nature, while others would follow the forms of artificial vessels made from other materials. Since from some materials certain shapes are formed with less labour than others, the shapes of the artificial models would vary with the materials of which they were fashioned. Conical, hemispherical, and spherical vessels may have been copied from basket models, while the rectangular shapes may have been derived from pre-existent wooden trays.

While the worker in wood, bark, bone, or stone finds that the rigidity of his material imposes upon him many limitations with regard to the shape of his products, the mobility of the clay facilitates the intro-

duction of a variety of forms, and of any improvements suggested by utility or convenience.

Mr. W. H. Holmes explains that the shapes (round or conical) of 'primitive earthen vessels suggest the manner of their use'. The floors of savage races are generally formed of loose sand or soft earth, and hence are scarcely ever level. A rounded or conical pot would stand easily on such a floor. Such a pot when placed, as was customary, directly on the fire, would be kept in position by supports or by the fuel which was placed around it.

Fig. 175. Patterns made by Crude Methods.

Decoration of Primitive Pottery

Savages begin very early to decorate the results of their handiwork. It is very likely that the first patterns were produced accidentally, and that such accidental designs were copied intentionally in later efforts.

Early pottery shows us designs made by means of impressions of the finger-tips, the nails, shells, bits of stone, &c.

Stamps similar to those used for finishing butter were used. Mallets were made for beating and impressing, and pointed sticks for puncturing, carving, and

incising. In addition to these, markings from various kinds of woven materials are common. Probably the occasional difficulty experienced in removing the clay from the mould may have suggested placing a cloth under it to facilitate such removal. A pattern would result which has been reproduced by other means.

Application to the Work of Children

Many analogies may be seen between the work of child-peoples and that of the young child. Thus there

Fig. 176. Making a Pattern with String.

is a marked similarity between the drawings of primitive man as we see them in pieces of bone, ivory, or stone, and those of the child. The first patterns made spontaneously by the latter bear much resemblance to those seen in the vessels made during the childhood of the race. The first inventions of the child, like those of the first potters, seem to arise out of the handling of the material rather than from any fixed design. Such accidental and sometimes surprising results reveal to the child his own power and the possibilities of the material. When he has realized what he can do with his resources, improvement follows rapidly, as he plans,

executes, and eventually does what he will with his medium.

The primitive potter built up his designs from units suggested by the motives he saw around him. Similarly the child may choose suitable motives for the decoration of his rude pottery, such as small shells, tiny stones, &c.

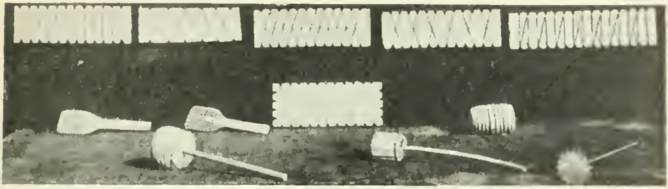

Fig. 177. Tools for Impressing Patterns.

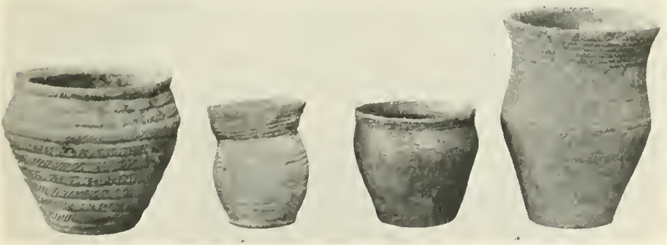

Fig. 178. British (Bronze Age).

Mallets may be made of cardboard or of wood. A variety of patterns may be reinvented by the child by winding string around pieces of wood or cardboard (Fig. 177). Then such patterns may be impressed on the soft clay by beating and pressing with the mallet.

Rolling or 'rocking' tools may be made from empty cotton-reels wound with string in various patterns. Such tools enable the worker to get a more continuous pattern than could be obtained from the

mallets. The latter patterns tend to show breaks and overlappings.

Pieces of string or cord are impressed into the clay.

FIG. 179. Romano-British.

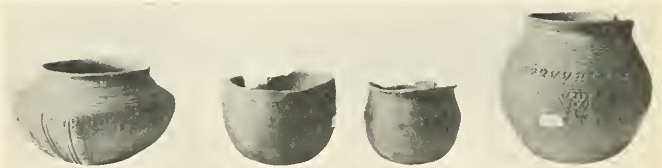

FIG. 180. Anglo-Saxon.

Little wheels containing notches at regular intervals are used to imitate the impressions made by string (see Fig. 177).

A simple course of pottery may be a field giving scope for the growth and development of the child's creative powers. As he progresses from the shaping of mass or the hollowing out of a ball to the more diffi-

cult stages he will at every point reinvent the simple device needed to aid him in his upward course. As history thus repeats itself, the teacher, conscious of the stages passed through in the early days of the art, may stimulate and encourage by calling attention to this or that device used in primitive times. Comparisons with the children's results will follow, and the interest will rise to a high level.

Such work should be supplemented by an examination of any drawings or reproductions of early pottery

FIG. 181. Celtic.

that are available, and by visits to museums. This study will help the children to compare modern conditions with those of these prehistoric times, and more fully to understand the present. The observation of the remains of the potter's art left to us—such as the vessels used for carrying and storing food and drink or for the cooking of food—should be followed by a Sherlock Holmes exercise in making deductions from their shape, the material used, and the character of their decoration. Thus the dry-as-dust museum specimens may possess for him the fascination of a story-book, and even the 'broken potsherds' of a prehistoric past may be an open book from which he can read, and in imagination reconstruct the life of dim and distant ages.

Books of Reference

Clay Modelling from Nature, by Lilian Carter.
The Montessori Method, by M. Montessori.
An Introductory History of England, by C. R. L. Fletcher.
The Makers of Black Basaltes, by Captain Maurice Grant.
The Origin of Invention, by O. T. Mason.
Woman's Work in Primitive Culture, by O. T. Mason.
Fourth Report of the Bureau of Ethnology.
The Ceramic Art of the Pueblos, by W. H. Holmes.
The First of Empires, by W. St. Chad Boscawen.
Article on 'Architecture' in the *Encyclopaedia Britannica*.
Introduction to the Study of Gothic Architecture, by J. H. Parker.

CHAPTER XVI

NEEDLEWORK

Children should not be expected to do fine needlework before they are at least eight years of age. Happily the teaching of such sewing as necessitates the use of a fine needle is becoming less and less frequent in infants' schools ; but in days not so very remote, young children were expected to sew long seams, to hem interminable hems, and to perform other arid tasks, which probably seemed to them as never-ending as the labours of Sisyphus.

As soon as it is generally realized that sufficient technical skill for the child's needs can be acquired far more effectively by allowing him to follow the promptings of his constructive instincts, and to make such things as are within the inner circle of his own interests, wearisome exercises of this kind will cease to cloud the happy days of childhood.

The provision of a variety of occupation seems to satisfy the love of change so characteristic of little children, and also to offer the best means of developing their intelligence. The stringing of large beads on a thread, the end of which has been stiffened by wax or by other means will prepare for threading a needle. The use of coloured string for free winding on notched cards of varying shape [1], or free sewing with brightly-coloured laces or coarse wool on punctured cardboard will suggest possibilities for the representation of objects of which even a child of four can take advantage.[2]

The idea of joining two pieces of material together can be introduced by the lacing of boots. Winding,

[1] See Fig. 177 in chapter on Pottery.

[2] See Chapter III, p. 51.

coiling, and plaiting are exercises simple enough for very small children. They lead up to weaving, and weaving is an excellent preparation for ordinary sewing. Tying and knotting also have a place among exercises which prepare for the use of a needle and cotton.

Such exercises as winding, plaiting, knotting, and weaving with coarse material offer a variety of larger movements suited to the young child—movements which develop by the way a greater amount of skill than is likely to be acquired by the premature performance of fine work. Before a little child can do a presentable piece of fine hemming he must repeat *ad nauseam* one series of movements. This dreary repetition has an arresting tendency. Contrast the listless child in the midst of such a tedious task with another engaged in plaiting a skipping-rope of raffia, or weaving with wool a doll's garment. In the latter case the work is free and coarse enough to be done without strain, and the joy of looking forward to the speedy completion and use of the product renders the work a pleasure. Moreover, the same exercise which drives a young child of six or seven to distraction demands but small effort from the child of eight or nine who has had a course of simple constructive work.

There is abundant scope for great variety in the preliminary exercises. Thus where the manual activities grow out of primitive life stories the historical aspect of sewing will be prominent. With a little stimulus and suggestion the children will be able to trace the history of the needle in use to-day from such natural awls as the thorns from the hawthorn bush, the bones of fishes and of birds, or the spines of the hedgehog or the porcupine, to the flint or bone needle with its 'eye'.

The evolution of sewing from the crude tying and stringing of two edges of material together by means of a series of separate knots, to the use of a continuous

thread will readily be understood, when children have practised both methods.

Interesting points of comparison are offered in such vestiges of primitive needlework methods as still survive in the work of the shoemaker.

The use of the awl by the dressmaker and the embroiderer may be compared with the boring tools used by the workers in wood and other rigid and semi-rigid materials.

When the children are studying the rude homes of the Cave Men in the prehistoric Stone Age, or of such people as the Eskimos, whose present-day conditions are not much further advanced, or the social life of any other people in a similar stage of civilization, a short course of needlework by primitive methods will help them to put themselves in the place of the people they are studying.

Frequent discussions take place as to the conditions under which Sharptooth or little Tig lived, and as the children enter into the fun of thinking out what materials they had to hand, they are taught how great their limitations were. As comparisons with home conditions naturally follow, the latter are better understood and appreciated. The fun is much increased when the children use tools similar to those of Tig or any other child in like conditions. Many primitive tools may be brought by children. When it is found impracticable for the whole class to use such tools at the same time, sections of the class might use them in turn.

In some cases anachronisms are almost unavoidable. Thus it is sometimes convenient to replace the skins of animals by sacking.

During a study of the Cave Men the problem might be worked out by making a cave in a corner of a school or classroom, or in the playground. The cave in the illustration was made by children of about seven years, with some help and directions from their teacher. The inhabitants of the cave consist of small dolls dressed by the children in pieces of rabbit-skin.

After a discussion on the methods of sewing in vogue in the Stone Age, each child followed his own method of dressing the dolls.

Any awl that was thought to be available in the Stone Age was used. Not infrequently tying was the method naturally employed by the children as a means of joining their little skin garments.

When the dolls were finished the next exercise was the construction of skin cradles, in which from a tree or ledge of rock outside the cave the babies could be

FIG. 182. The Cave Men.

hung. Pieces of kid cut from old kid gloves were provided, and the sewing was done with fine raffia. As soon as the children realized that the sewing was like lacing boots they found it quite easy.

When facilities exist in the school garden or playground for the construction of a cave large enough for the children to enter, greater scope is afforded. The adjustment of the dress may again offer an opportunity for studying the genesis of sewing. A skin of an animal (a rug) or a piece of coarse sacking may be thrown over the shoulders and there held together by means of a thorn, a small pointed bone, or a pin.

Later the children suggest tying the garment on the shoulder with string or with thongs. They are interested in comparing the garment thus improvised with the cloak of the Romans fastened by the fibula, or with such survivals as the Scotch plaid, and its fastening, the Cairngorm brooch.

Many other exercises in coarse sewing may be done in connexion with such studies, such as the making of quivers from brown paper and raffia.

In connexion with a study of Ancient Britons, coracles may be made of fine willows and rushes, and covered with skin (old kid gloves or American cloth). Crude sewn basketry makes a good introduction to needlework. The needle used for such work is large. The fact that in basketry many of the stitches are worked from left to right, while running, hemming, seaming, and other needlework stitches are worked from right to left, need not be a hindrance to the young child before a set habit is formed.

After a simple course of weaving with various materials some exercises in sewing with raffia or wool on coarse canvas will form an easy transition stage to ordinary needlework.

The square mat, the tidy, and the needle-book in Fig. 183 are worked with wool on rug canvas in the ordinary tacking stitch. The sloping stitch in the small oblong mat and the letter-rack is intended to be an introduction to hemming. This stitch can be worked into various patterns. The book-cover and the handkerchief-case are finished with buttonhole stitch and decorated with stars.

From the first the children should do all the measurement and planning for the cutting-out of the articles they are to make. When it is not expedient for the children to cut the actual material, they may design and cut out the patterns. A course of paper cutting will form an excellent preparation for simple cutting-out of such articles as children can begin with.

Each article made should be such as the child can

see in use practically as soon as it is finished. The doll's house may again be the centre, or small useful articles such as book-covers and work-bags may be made. The main aim in the teaching of needlework, as in that of handwork, should be the mastery of such principles as the children can apply in their home life, and the best test of such teaching is the amount of resourcefulness and power which the children exercise when out of class. The children gather valuable experience from the making of wardrobes for dolls. Teddy bears, and the furnishing of the doll- or play-house.

It sometimes appears that children who have received no instruction in sewing show a greater amount of ingenuity in real child needlework than does the pupil who has worked carefully and methodically through a formal course of instruction. The writer remembers an interesting Teddy-bear wardrobe designed and made up by a little girl of ten years, who had never had a lesson in needlework. The finish of the garments would probably not have satisfied a needlework specialist, but they were well cut and serviceable, while the costumes varied from the full academical dress of a high university official to the simplest night attire.

It may be advisable to begin the teaching of sewing by free work on children's own lines. For the first two or three lessons they might bring from home any available pieces of material, and make anything they like without guidance. During this work the teacher would observe very carefully what they prefer to do, how they approach their respective problems, what kind of stitch is most generally employed, and many other details that will guide her in the teaching of the subject.

Many teachers have tested children on these lines. In one experiment tried [1] in a class of children whose ages varied from five to seven the children were left absolutely free for the first exercise as to choice of

[1] By Miss Edith Wood.

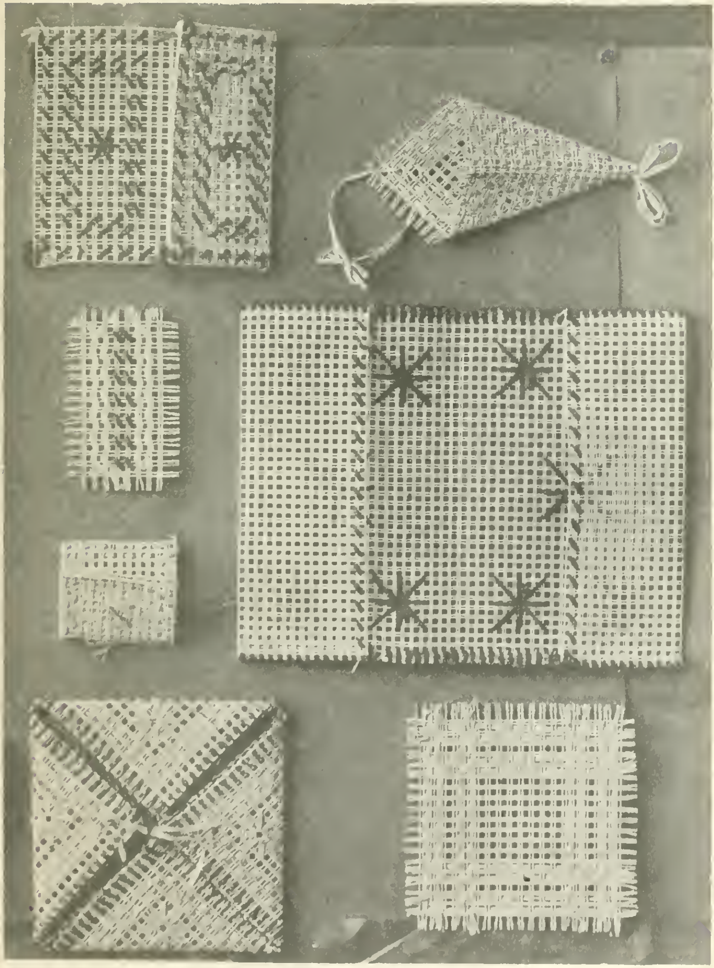

FIG. 183. Designs on Coarse Canvas.

material, subject, and method. For the second exercise the teacher suggested that each child should make some garment for a doll, while for the third she chose material and suggested a subject. During this free work the tacking or running stitch seemed to be the favourite ; it was employed as a means of joining two edges together or for gathering or pouching up, and was worked in a 'stabbing' manner. The choice of subject in the first exercise seems to have been affected by a prevailing fashion for wearing bags, for a number of the children tried to make receptacles of varying shape. Three of these were very ingenious, and one was most fascinatingly screwed up. Another child made a pillow and stuffed it with paper, while another made a handkerchief by folding the edges of her material over once and running along the edge.

The following were among the products of the second exercise—making a doll's garment :

1. An oblong piece of material gathered up for a cape. The hem was tacked.

2. One end of a square was puckered up to serve as a bonnet.

3. Three children made overalls, and tried to insert sleeves. In one case the sleeves were tacked on to the overall just above the holes cut for the sleeves.

For the third exercise, when the teacher supplied material, and suggested the making of a bag, all the children again used running stitch, turning the raw edges inside.

Another child was given two pieces of stiff canvas cut into the shape of a Christmas stocking. The child joined the two pieces by sewing over and over because she said it was the best way to do it ; she did not know that she was 'seaming'. Such work should be full of suggestion for the teacher in formulating a scheme for the teaching of needlework, and it will also give many hints as to the most suitable methods.

Figs. 184 and 185 show some of the earliest work done with a needle and cotton by a class of children

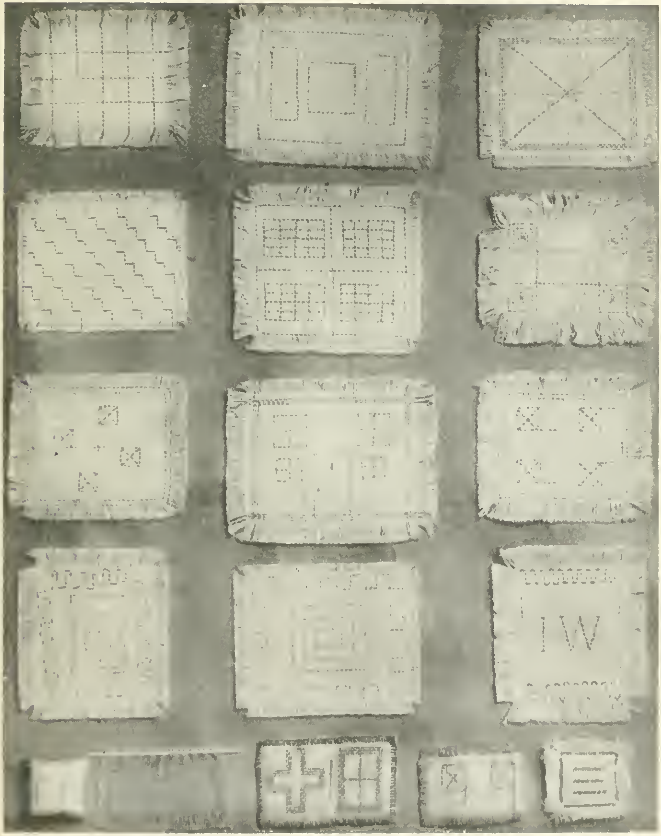

FIG. 184. Early Needlework Exercises.

of about seven years of age. They had previously done some coarse sewing on canvas with Berlin wool, some raffia sewing, some weaving, and some crude dolls' clothes, e.g. a nightdress.

The work centred around the bed for a little doll. All the oblongs in the first four rows of the figure show the results of their efforts to prepare tiny bedspreads for the bedsteads.

1. *Measuring and cutting out pattern.* Each child was given a piece of square paper and a tape-measure. The size was decided on, and each child cut out her small pattern. This was carefully put away in a work-bag until a later stage.

2. *Making designs.* It was decided to make a pattern to decorate the bedspread. On their free-arm drawing-boards the children made drawings of the design they intended for the purpose. These were transferred by each child to his squared paper. Nos. 1, 3, 4, and 6, and the borders 2, 7, 8, 9, 10, 11, 12, show some of the results as they were worked on the bedspreads.

Some of the children felt that their patterns were not large enough to fill up as much of the bedspread as they wished, so a discussion arose as to the best way of filling them up. Many suggestions suitable and unsuitable were made. The teacher then told them they must try and see if the *motif* they had chosen would do. The children experimented (1) on the walls, and (2) on bits of squared paper, and they found they could not make flowers or any rounded objects satisfactorily. Then, benefiting by experience, a suggestion of possible objects was made, e.g. a flag, a shield, a window, a door, a box, a star, a cross, and letters made from straight lines. The centre of No. 2 shows a square box flanked by two oblong boxes; that of No. 3 is meant to be a star; No. 5, windows; Nos. 7 and 9, big flags; No. 8, a door and four windows; No. 10, a shield; No. 11, series of boxes inside each other; and No. 12, the child's initials.

3. *Sewing designs.* This running or darning on canvas followed very naturally on the weaving. A coarse mat woven by the children was compared with the piece of canvas (cut by the teacher from each child's pattern), and the likenesses and differences noted.

Each child tried to darn a pattern on a tiny bit of canvas before beginning his bedspread. They were then ready to work their designs. After the borders had been done some of the children felt that their counterpanes would be prettier if additions were made to the centre. Then the centre design was worked out. One child varied her running stitch to form stars; another border had been suggested by the battlemented walls of a castle.

When some of the quicker workers had finished their bedspreads other objects were suggested. The tiny cushions, curtains for doll's house, and needle-books

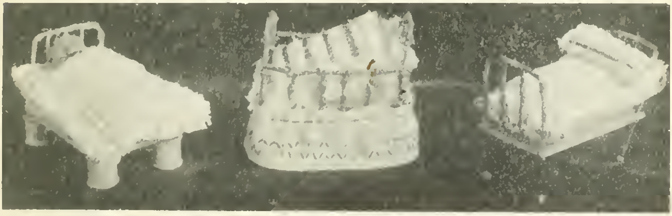

Fig. 185. Dolls' Bedding.

shown at the bottom of Fig. 184, and the doll's bedding in Fig. 185, are some of the results.

Rough oversewing. The small blankets were next dealt with. The little ones were asked if they had noticed the blankets at home. Descriptions followed. One child mentioned the pretty red stitches at the top and the bottom. Why were they there? No one could tell. Then the teacher pulled out some threads from the little blankets, and children saw that it might easily be frayed to pieces. So they said, 'The pretty red stitches are to keep the blanket from getting ragged.'

A scrap of flannel was given to each child, who tried to make a stitch which would stop the fraying out. The blanket, nightdress, and bedspread were all worked in the stitch chosen—an 'over and over' stitch. The

pattern for the nightdress was designed by the children by folding a doubled square into sixteen smaller squares.

Other stitches. On the large piece of canvas the long straight stitches were shown and worked in three directions—vertical, slanting to the right, and to the left. The teacher demonstrated on her large sheet, and several children came out and made a stitch in imitation of that made by the teacher. The stitch was utilized as an ornamentation of the bed valance, the pillow, and curtains, and the covering for the doll's carriage.

Buttonhole stitch was taught and used as a border for the cushion, to prevent fraying out. The children were glad to work in this stitch, and many objects for little presents were made. Many useful articles can be made by oversewing the canvas with blanket stitch and then seaming the edges together, e.g. pincushion, spectacle-case, serviette and curtain ring, small bag for various purposes.

The exercises in working with bright harmonious shades of cotton, as suggested by Miss Swanson and Miss Macbeth, offer an excellent means of introducing children to needlework. For the early exercises they love to cover their material with designs and 'to make it all fancy'. They pass on from such free embroidery to the more commonplace needlework by means of large bold stitches, which fulfil the double function of construction and decoration.

Work with Chequered Material

When chequered materials are used for the first exercises, the planning, calculating, and fixing of the work are made very simple for the children. Large chequers, such as are made in glass-cloth canvas, are useful for a beginning in such formal work, and the smaller chequered Oxford shirting can also be used. Such articles as a small bag to hold work, a book-cover, or a lap-bag may be the first articles made. The

material would be hemmed all round—long sides first—and then sewn. A book-cover might be made to fit a special book. The measurements and the amount of material required should be worked out by the children before the material is cut.

FIG. 186. Dolls.

Making Doll's Clothes

The dolls shown were dressed by children of six or seven years. All the patterns were made by the children from folding under the directions of the teacher. They consist of:

1. Chemise.
2. Pair of drawers.
3. Flannel petticoat.
4. Princess petticoat.
5. Dress.
6. Coat.[1]

[1] These are shown in Fig. 187.

Doll's chemise. This was made from an oblong piece of material, length twice the width—a doubled square. The paper was doubled at the shoulder and folded into sixteenths. The pattern was then drawn on the doubled square as in the diagram.

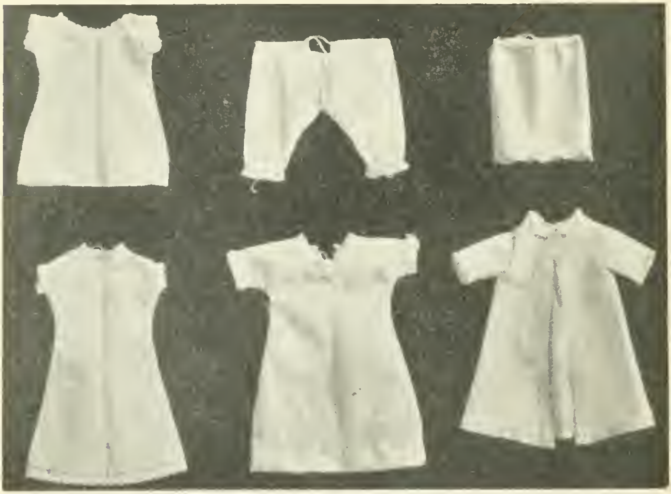

FIG. 187. Doll's Garments.

Doll's pair of drawers. Material required: Oblong $1\frac{1}{8}$ as wide as long. Fold into sixteenths, mark the points shown by dots, and draw as in the diagram.

Doll's frock. Material required: An oblong length $2\frac{1}{2}$ width, double at shoulder. Fold into sixteenths each way. Mark pattern out so that the back of neck is rounded and the front pointed.

Doll's flannel petticoat. Measure length of doll from waist to knee. Material required: An oblong of which the length is equal to the measurement taken above, and the width twice length.

Doll's hat. Material required: (a) *Square* of muslin

twice the width of the doll's head ; fold from centre and cut into circle. (b) *Oblong* for frill ; width of doll's head, and twice as long as circumference of circle.

Doll's coat. Material required : oblong, width twice length ; double in half, and fold into sixteenths.

Doll's Princess petticoat. Material required : oblong = length of petticoat + $\frac{1}{4}$ width. Fold into sixteenths. The dotted line in the diagram represents back.

Crocheting

Young children learn to crochet more readily than to knit, and the former exercise is a good preparation for the latter. When the work is done with a bone hook and suitable wool or string, articles are more quickly finished in crochet than in knitting, and this is a great encouragement to a little child.

Knitting

Knitting may be begun when children are about seven years of age. The clothing for the dolls shown in the illustration was knitted by children of six or seven years.

Their interest was first aroused by the teacher dressing a girl doll in knitted garments, and showing it to the children. 'How were the things made?' They were knitted. The doll was then undressed, and the children noticed and named the various articles thus :

1. The muff.
2. The tiny bag or pocket.
3. The bonnet.
4. The coat.
5. The dress.
6. The petticoat.
7. The combinations.[1]

After a discussion on the dressed doll and the separate garments the teacher did a few stitches of knitting. All the children were eager to learn how to knit and to dress similar dolls for themselves.

[1] These are shown in Fig. 189.

Teaching the stitch. Many of the children had already made chains by drawing one loop through another with their fingers. A beginning is made by knitting a few stitches for such a chain with knitting-needles. By examining the little garments the children find out that these narrow strips will serve as a cord for the muff, a string for the bag or for the little pocket, reeving strings for the bonnet, the coat, the dress, the

Fig. 188. Dolls dressed in Knitting.

petticoat, and the combinations. After the stitch has been practised in very coarse knitting-cotton, the chains made by the most successful knitters are saved ready to be applied to the above garments.

Two or three stitches were set on, and various uses suggested for the narrow strips of knitting, such as a girdle for the girl dolly, or a band for her hat. After the boy doll had been seen and examined, the tiny braces were also included. The bag, muff, bonnet, and the boy's hat were next undertaken in turn.

Planning garments. The finished garments were

Fig. 189. Knitted Garments for Dolls.

given out, and the children measured and cut patterns as a guide for the piece of knitting required.

Casting on and off can easily be practised when only three or four stitches are on the needles.

Girl's coat. A finished coat should be shown, and also a flat piece before it is joined up.

Method. The rows for the front should be counted ; the children should note the two left under the arm, the back, the sleeves, &c.

When the sleeves have been knitted the whole can be joined together.

Blanket stitch has been worked around the coat and the bottom of the sleeves. The boy's jersey is treated in a similar way, except that the back is closed by sewing.

The petticoat and the frock can next be knitted. The method for the bodice of the frock is similar to that of the coat. The shoulder-straps for the arm-holes and for the petticoat and the combinations were made by knitting five stitches for four rows.

The legs for the lower part of the combinations and for the boy's knickers are made by casting off twelve stitches.

Hats may be made of various shapes. As a change the girl may also be dressed in jersey and skirt.

Book of Reference

Educational Needlecraft, by M. Swanson and A. Macbeth.

CHAPTER XVII

MISCELLANEOUS WORK

The Doll's House

THE doll's house should be an essential feature of every infants' school and kindergarten. When the

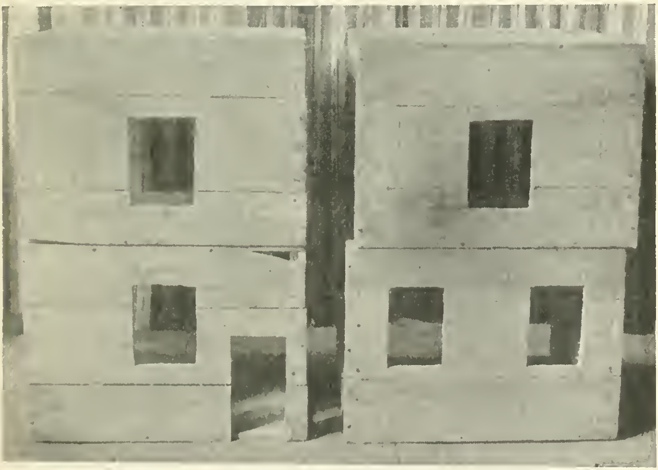

FIG. 190. Boxes for Doll's House.

school is supplied with a highly finished product, the teacher and the children are often deprived of the joy of making and adapting one to their particular needs.

The method employed in the construction of such a playhouse will vary with the individual who attempts the work. One clever and inventive teacher [1] suggests and successfully leads a group of little children in forming one from small match-boxes. Furnished with

[1] Miss Ogden, Akroyd Place Council School, Halifax.

the tiny boxes for bricks, the little workers build and glue until the desired size and form are reached. Some of the problems which confront an ordinary builder are met and solved during the process, while the some-

Fig. 191. Doll's House (front).

what flimsy material presents special difficulties of its own.

The most unskilled worker in wood can make a doll's house by joining together a number of boxes. These can usually be obtained with little trouble from tradesmen or from the children's homes. The illustration shows a very rough doll's house, which could be made by children of nine or ten years of age, or even by

younger children, with some help from the teacher. The material consisted of four Tate sugar-boxes for the four rooms, strips of wood for the roof supports, corrugated packing-paper for the roof, cardboard for the staircase and hall partition.

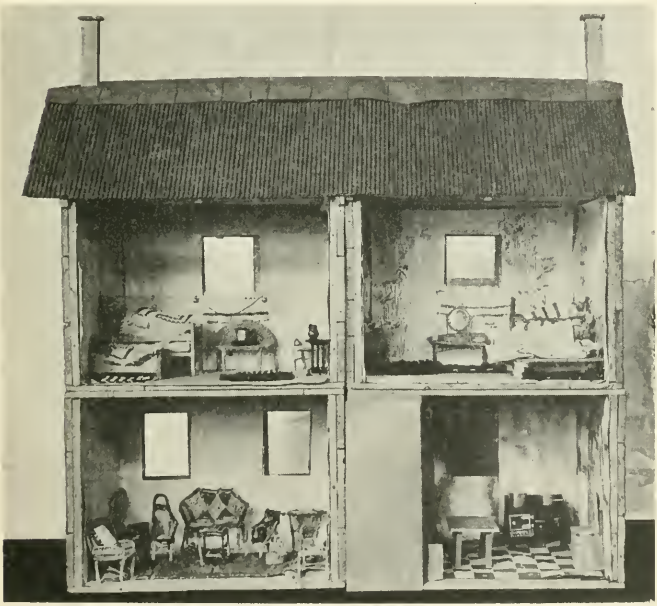

Fig. 192. Doll's House (back).

The holes for windows, doors, and for passing from the staircase to the second floor were cut by means of a keyhole- or pad-saw. The supports for the roof were made in two parts by mitring the strips and fixing them together. The staircase was carpeted with a piece of white drawing-paper, on which a red stripe had been painted.

It is a convenience to have each room separate while

the furnishing is in progress, because different classes can undertake different rooms. When the furniture is all ready the 'rooms' may be screwed together in such a way as to allow of separation for refurnishing.

A screen for the back may be made of bead and bamboo threaded by the younger children.

A more finished doll's house was made at Holy Trinity Infants' School, Oxford. As in Fig. 191, the solid portion of the building was made by joining together four Tate sugar-boxes. In order to have a hall in the centre of the building, one side of each box was removed and fitted inside the walls, about 4 inches from the centre. This

FIG. 193. Individual Doll's Houses.

gave a hall 6 inches wide. The house was fitted with doors, in which the windows were cut. These were fastened to the sides of the Tate sugar-boxes with strong hinges.

The staircase was built of match-boxes, and the railings around the sides of the landing of large sticks, such as are used for stick laying. The framework for the roof was made of strips of wood. The roof was finished by nailing or gluing a number of pieces of cardboard, overlapping to form tiles, on to a larger piece of wood or cardboard.

Empty boxes of all descriptions are very useful in furnishing the doll's house. The kitchen dresser may be made from a chalk-box—match-boxes being added for the drawers. A chest of drawers may be made by joining a number of match-boxes together.

Individual dolls' houses. With a little encouragement children will construct dolls' houses for themselves. The photograph shows four that were made at home from cardboard boxes by children of about seven years of age. An exhibition of such tiny houses on a parents' open day showed great ingenuity in the adaptation of waste material to uses both varied and original.

Play with Dolls and Dolls' Houses

In the Montessori schools young children are taught to dress and undress themselves by means of a series of exercises called ' Fastening Games '. The apparatus for these games consists of a set of ten frames on each of which are mounted two pieces of cloth, linen, or leather. Fastenings corresponding to those on some portion of the child's clothing are sewn or worked on each set. Thus on woollen material the child learns to button and unbutton large buttons, to hook and unhook hooks and metal eyes, or hooks and worked eyelets, on leather to button by means of a buttonhook and to lace, and on linen to button and unbutton small pearl buttons. Even the tying of ribbon and the use of automatic fasteners are not omitted.

Teachers who have any experience of the partial undressing of children necessary before weighing and measuring them will be able to bear witness to their general helplessness in the matter of dressing and undressing themselves. Therefore such a practical means of leading them to be less dependent should receive due consideration. It seems, however, that, as in sense-training, the same result might be obtained by less formal means. Where arrangements can be made for the children to work and play in small groups the doll's house may form the centre around which such plays revolve. A substitute for the fastening games might be found in adjusting the various fittings of the doll's house, and in the dressing and undressing of good-sized dolls, whose clothing might include all the necessary fastenings.

Construction of Models at Home

The natural boy loves to invent and to construct toys similar to the objects he sees around him. The

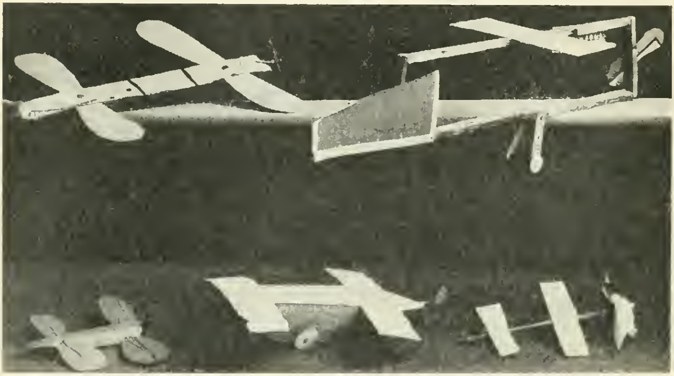

FIG. 194. Aeroplanes.

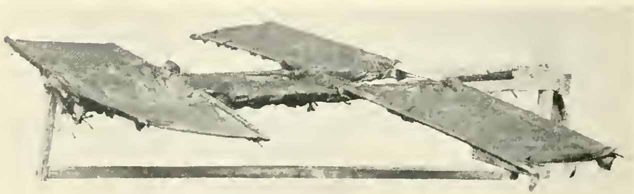

FIG. 195. Aeroplane (from above).

presence of an aeroplane station in the vicinity of Oxford resulted in the construction of toy aeroplanes of all sizes and patterns. Figs. 195 and 196 give two views of a masterpiece made by a boy of thirteen. When wound up by twisting the elastic fastened from a cross-bar to the propeller, this ingenious toy would 'fly' some

yards. The model was made of rough waste material; the silk with which it is covered was obtained from an old umbrella, and the elastic from old golf balls.

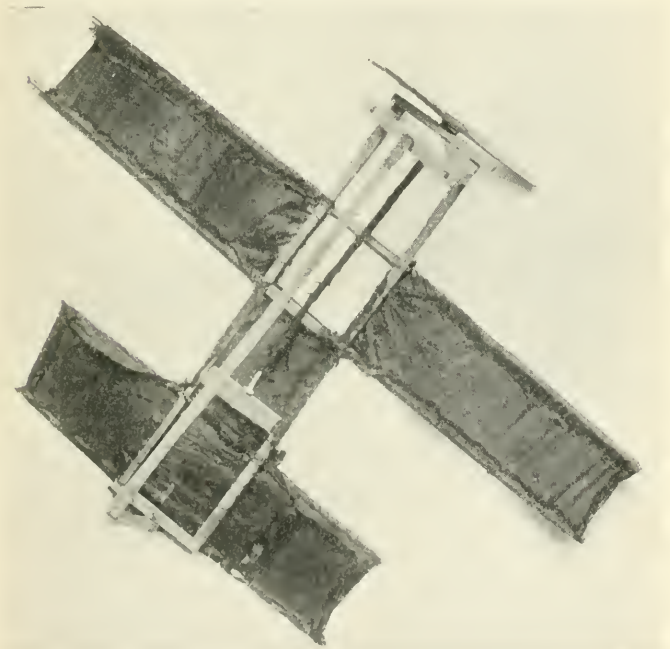

FIG. 196. Aeroplane (from below).

A boy who lived near a coal-pit made a good working model of a crane, and another made a copy of a revolving bridge, which spanned the canal near his home. Often all that is needed is a little stimulus and appreciation.

Handwork in Connexion with School Festivals

The Christmas-tree forms an excellent centre for the handwork of little children during the term from

Fig. 197. Christmas-tree, showing work of Six-year-old Children.

September to Christmas. The illustration shows a small tree dressed mainly with objects made by children of about seven years.

When Valentine's Day is celebrated by making

Fig. 198. May Day.

Fig. 199. Guy Fawkes.

valentines to send to various members of the home circle, much pleasure is derived. The little model of a Maypole is a record of Maypole festivities. Several simpler poles were represented with dolls made of

paper around a pole made by a knitting-needle stuck into a cork.

When old festival customs are kept up and used as a means of illustrating a study of primitive life, the Kernababy or harvest goddess (regarded by our pagan forefathers as 'an earnest that corn will not fail till next harvest comes') may be made. When made of bunches of corn, one or two may be kept in school and used for reference during the year.

The grotesque figures in Fig. 199 were intended for contributions to a bonfire on Guy Fawkes' Day. They were made by children of five years from any rough material, such as newspaper, packing-paper, straw, or shavings. Various masks were added. Those in the illustration were made of orange-peel.

Threading and Chain-making

This is a favourite pastime with children of all times and of all races. The love of child-peoples for beads and other bright objects which may be strung into girdles, necklaces, and bracelets is well known.

While threading comparatively large objects, such as cotton-reels, shells, and large beads, the child is enabled to see the result of his efforts very quickly, and at the same time such fundamental childish instincts as the love of collecting, building up, and the joy of 'being a cause' are being satisfied.

Wherever the conditions allow of the child coming into direct contact with nature, a wealth of natural material suitable for stringing may be found. Flowers such as daisies, cowslips, marsh marigolds, and dandelions make most delightful and artistic chains, and though their duration is ephemeral, the memories of the happy time will live in the hearts of the young chain-makers. Among such delightful exercises may be mentioned the twining of flower crowns for wearing on May Day, or for any special occasion.

A class of young children received much pleasure

FIG. 200. Threading Seeds.

from the twining of crowns of anemones while learning and reciting Christina Rossetti's 'Twist me a crown of wind-flowers'.

The treasures to be obtained from the storehouse of nature are practically endless and inexhaustible. Among such may be mentioned the winged seeds of the ash, the maple, and the sycamore, acorns, chestnuts, kidney beans, marrow and melon seeds.

Through the handling and arranging of materials possessing great natural beauty and much diversity of form and colour, it is possible to develop in the children an appreciation of beauty and of harmony which should be a valuable asset during their whole life.

The material may be collected during nature excursions or brought by the children. Many of the seeds need piercing or boring before being threaded by the children. Sometimes older children will volunteer to do this. When ‘ onker time ’ is over in the autumn, it is easy to obtain numbers of the discarded chestnuts ready bored. These may be made into reins, with which the children may ‘ play at horses ’.

Threading should take a permanent place among the exercises for the very little children. The best everyday material seems to be beads of a large size and a bright colour, but many materials are available, and each teacher will select what best suits her own special needs.

The teaching of number. This occupation is a valuable means of helping the child to gain ideas of number. Among such exercises may be mentioned the threading of beads in twos, threes, fours, &c., and thus providing a ready concrete means of showing the processes of addition, subtraction, multiplication, and division.

The teaching of design. This will be helped by the alternation of form obtained during the threading exercises.

In the course of a series of Primitive Life Studies, threading may play its part as one of the occupations. Beads are much beloved by savage peoples, and in this love of decoration the relation of the child-spirit to that of the child-peoples is obvious.

INDEX

Note.—Names of authors and their works are only indexed when they are referred to elsewhere than in the lists of Books of Reference.

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